



The American **CINEMATOGRAPHER**

A · MAGAZINE · FOR
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In this number

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JANUARY 1932

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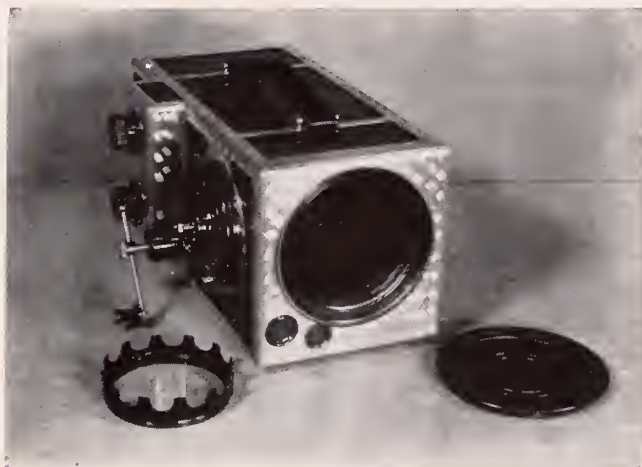
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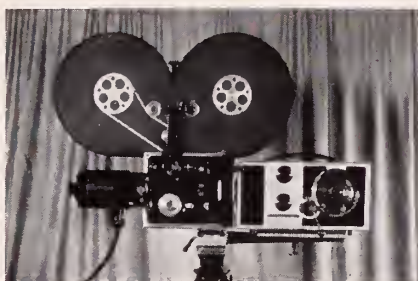
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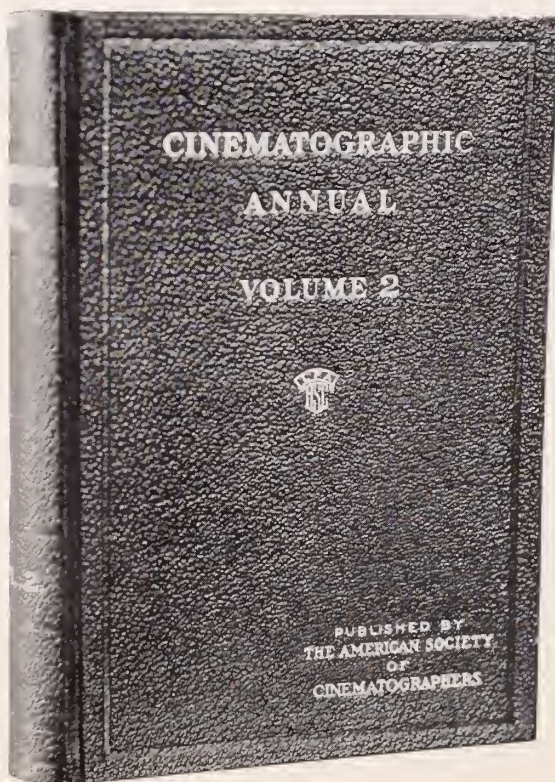
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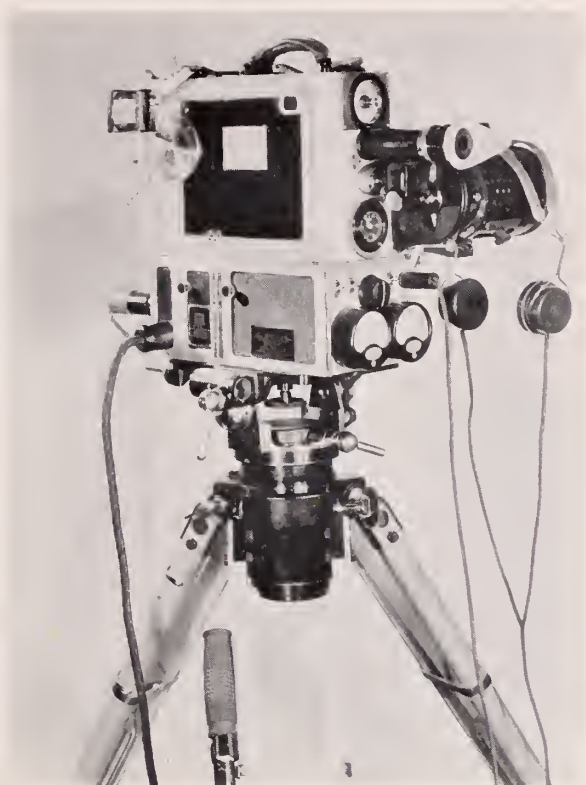
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Wandering With Vanderbilt

by **ALFRED L. GILKS, A.S.C.**

Chief Cinematographer, Vanderbilt Oceanographic Expedition

● Editor's Note: Mr. Gilks left Hollywood last June on a globe-circling expedition with Commodore W. K. Vanderbilt. The expedition left Northport, L. I., on board the Vanderbilt yacht, *Alva*, in which the entire trip is being made. Special camera and scientific equipment were taken, and a special housing for underwater use of the Eyemo camera was devised for the trip. This was described in the October issue.

WELL, here we are at Lautoka. If you will get out your map you will see that it is located on the northwest corner of the island of Viti Levu, which is the largest of the Fiji group. Yesterday we steamed out of Suva which is on the southeast corner of the same island. And while on the subject of Suva, let me say that you have never seen or felt humidity until you stop at Suva. For three days it rained most of the time, and when the rain was not falling the humidity was so great that everything you touched was soaking wet. Net result was that we couldn't do much with a camera.

That is one of the big problems you have to face when you come to this neck of the woods, and the man who some day will devise a way to impregnate every bit of equipment so that it will not be affected by moisture will be a millionaire.

At Lautoka the climate is a lot like Southern California, and the general appearance of the country also.

The hills build up rather gradually from the coast to the steeper mountains so along the coast there is a mile or so of good farm land, almost every bit of it is planted to sugar cane. Lautoka has one of the largest sugar mills in the world. The town is just large enough to supply the plantation laborers and

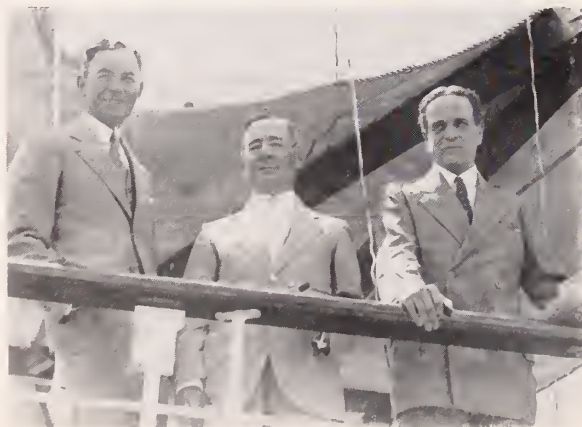
the mill employees. There is no other business of any kind. There are a half dozen stores and a little hotel. The sugar company runs a miniature steam railway to gather up the cane; 90 miles in one direction and 50 miles in the other. We saw dozens of trains with 40 to 50 cars to a train; each car carried one and a half to two tons of cane.

We arrived at Lautoka in the evening. The next morning we went ashore about 11:00 A. M. with our equipment. Finally found a rickety old car that was large enough to carry everything, then went to the bank to change some United States coin to Fijian English money. We spoke to every white man we saw trying to find where there might be something of interest to photograph; none of them seemed to have much to suggest so went to the hotel and asked the proprietor who suggested we drive out the road to the south. We drove out the road to a native village about 10 miles but there was nothing of interest along the road. All the

country shows the effects of a terrific hurricane that struck there last February, houses were wrecked and trees were blown down, practically all the native style houses had been blown away excepting the chief's which was more strongly built; even it is leaning heavily to one side and some of the roof is gone. Our driver, a Hindu, could speak Fijian and English; we spent an hour or so talking through him to the chief and some of the headmen. The chief is a fine looking old fellow. They brought out some old stone implements and an old kava bowl to show us, and told us some stories of the early days. A gang of natives were painting and finishing up a European style frame



A charming scene by Mr. Gilks.



Left to right: Mr. Gilks, Captain Harry Lane and Commodore W. K. Vanderbilt.



Mr. Gilks and some Samoan school children.



One of the engines that pulls sugar cane to the coast at Lantoka, Fiji.



Lined up for fishing. Bora Bora Island, Society Group.

house about the size of a 6 room bungalow for the chief; they all came out and loafed around in the shade with us. The chief sent a man to get some green coconuts. With a few strokes of their big knives a hole was cut in one end. We drank our fill of the cool sweet water from inside the young nut. Bob Bronner and I took snapshots of each other drinking.

There was nothing of interest to photograph at this village, or rather nothing but something similar to what we had previously photographed so we started back. Just before reaching town we took a detour to the edge of the lagoon to a fine place to swim at the driver's suggestion. It was a palm lined beach with clean white sand and a gradual slope out to deep water where the white people swim, the best beach near Lautoka. No one was in sight and the driver could watch the only road, so Bob and I stripped off and had a nice swim. We do not have very many swims as the "Alva" anchors in quite deep water and they have not been putting over the swimming nets. The chances of a shark being around is small but we are not supposed to go in unless the net is out.

The next morning we were under way early, heading in the direction of Australia. It was a beautiful day with a strong, southeast trade wind kicking up quite a sea. Thousands of flying fish rising like flocks of birds almost continuously from each side of the "Alva's" bow. Spent a good deal of the day working on the equipment, it is a continual fight against corrosion and rust.

Another perfect day followed and the trade wind had subsided and the sea was smooth and deep indigo in color, not a white cap in sight; yesterday the surface was covered with big patches of white foam churned up by the husky tradewind, looked like patches of snow. The sky a pure, clear blue, broken up with some gorgeous white clouds. At 4 P. M. we arrived in the lee of Ameityum Island, the most southerly of the New Hebrides group. We were within three or four miles of shore and could see a little government settlement with some radio towers. The island looked very interesting, rather narrow

(Continued on Page 24)



On the beach at Venus Point, Tahiti. Some of the specimens gathered for the expedition. Mr. Gilks by the camera.

The Woman as Film-Director

by HARRY ALAN POTAMKIN

I HAVE been asked a number of times, "Can a woman become a film-director?" My answer takes two forms. First, I make the obvious retort that women are in demand as players, as scenario writers, and as film editors. Then I go on to say how few women have ever created films. There was Lois Weber. She was one of the earliest directors and one of the few to act in films and direct them at the same time. She and her actor-director husband, Phillips Smalley, appeared in and produced the first talking pictures back in 1908 for Gaumont. Olga Tschechowa, Russo-German player, had a company built for her in Germany, and did some brief direction. The talkie seems to have forestalled her aspiration. Now we wait to see what Jacqueline Logan, formerly starred in American films, will do as player-director in England.

The unique American is Dorothy Arzner who developed from a film-cutter to a competent director of light comedy. Russia has Esther Schub who builds factual historical chronologies out of fragments of diverse pictures, and Olga Preobajenskaia, the erstwhile ballet-mistress who directed "The Village of Sin." We may expect to see many more women directors issue from Soviet Russia. There is a State School of Cinema which accepts women in its courses. The young daughter of the astute Chinese general and statesman, Eugene Chen, is now studying camerawork there, and will then go into the course for directors. In France, a young movie-journalist, Mlle. Lucie Derain, has made her own documentary film of the streets, rivers and incidents, the "Harmonies of Paris." Mme J. Bruno-Ruby, novelist, journalist, former golf champion of France, has directed films too. But the outstanding example and highwater mark among women movie-makers is Germaine A. Dulac.

Mme. Dulac last year was elected a Chevalier of the Legion of Honor in recognition of her staunchness for the film as a distinctive art. Her career in the cinema goes back to 1915, after a successful one as journalist. The press and the pen have been the way to the cinema for many noted directors, such as Carl Dreyer, the great creator of "The Passion of Joan of Arc" and Rene Clair of "Under the Roofs of Paris." Mme. Dulac has by no means let go of the pen since she took hold of the camera. She has been a persistent literary crusader in defence of the intrinsic motion picture. Press and platform have encountered Mme. Dulac's attack on producer and exhibitor who assume that a film, the work of an artist, is anybody's merchandise, to be mutilated as anyone pleases. She has also insisted upon what she accepts as the axiom of cinema, that the motion picture is inherently "visual" and when it wanders away from that it isn't a motion picture. Moreover, she has been active in presenting new young artists, like Jores Ivens of Holland.

Her first picture was "The Enemy Sisters." Following this she made "Geo the Mysterious" and "Venus Victrix." The war invaded the peace of the cinema. One worked desultorily. Mme. Dulac filmed "Souls of Madmen" in 1917. After the war, in 1919, there came "The Cigarette," "The Spanish Fete," upon a scenario by the late Louis Delluc, pioneer of the art-film as director and critic, and "Mischance." "At this period," says Mme. Dulac, "the French film began to re-assert itself, and the possibilities of a cinema aesthetic were apprehended." In 1920, there appeared under Dulac's direction "La Belle Dame sans Merci" and "The Death of the Sun." In 1922, Obey's scenario, "The Smiling Mme. Beudet," was produced. She then pivoted to the ubiquitous serial, endeavoring to create in "Gossette" a sustained style to renew the declining idiom of the film-by-installments. From the serial she turned to a

scenario by Bouquet and realized the fantastic "The Devil in the City," in which she showed her sensible and sensitive understanding and use of virtuositities. Then, in "The Artist's Soul," she introduced some absolute manipulations of pure film-processes. In 1925, came a "visual poem," based on a narrative by the Russian writer, Gorki, called "The Folly of the Valiants." "Antoinette Sabreur," a classic of the French stage, was next, "mutilated," she maintains, "by the producer." Her latest works include the ingenious "The Sea Shell and the Clergyman," "Invitation to the Voyage," "Oblivion," from a novel by the Rider Haggard of France, Pierre Benoit, and an "Arabesque."

Of her own films, Mme. Dulac prefers, among those "which have permitted me to work toward the evolution of the cinematographic art," "The Spanish Fete," "The Smiling Mme. Beudet," "The Devil in the City," "The Folly of the Valiants," "The Sea Shell and the Clergyman," and "Arabesque"; among those strictly commercial, "The Cigarette," "Gossette," "The Artist's Soul." Her attitude towards the film is concentrated in these words:

"To my mind, in the present state of the cinema, films have only two values: market and research. . . The director must seek, forever seek. The cinema has not yet arrived at the zenith which permits creation in repose. Yesterday prepares today, today prepares tomorrow."

A viewpoint such as this is fitting to the Gallic mind which creates a film as the problem of an individual artist at work in his own *atelier*, studio. Indeed, Mme. Dulac, like other French film-directors of merit, has been most interesting when the work she has done has been a personal adventure. She has failed, as most French directors have, in the long, commercial, popular, shopmade film. That is why it is so pitiful to find these directors forfeiting their independent graces to make foreign versions of American talkies. Mme. Dulac has not, I think, made that sacrifice yet. Pictures by her for competitive exhibition, for the box office, have been bad, straining to make poetry out of the banalities. The result is usually "poesie," paste jewelry, a sentimentalism of imagery and figure of speech frequently found in the work of our own important director, D. W. Griffith.

But whenever Germaine Dulac makes a film that is her own intention, there will be something worth one's interest. She herself has said to me, in one of our many conversations in her home encased in old maps and studded with antique curios: "Unless the French director prepares everything in the film himself from the script to the cutting, his film will not be fully realized. We are not a people as yet for collective filming." A change in the social makeup may effect a change in this mentality, but tentatively we may say that Mme. Dulac is right. That is why, as I told her, it seemed so strange to me to hear the Frenchman insisting upon a quota to protect the French film from foreign competition, mainly American. Mme. Dulac, however, favored it, not to keep American films out, the intention of the French producer and politician, but rather to urge French fans to watch the film-work of their compatriots.

French pictures, when they are well-done, are films calling attention to a method or a viewpoint or a quality necessary to enrich the evolving motion picture. They have special, elite merit, and are not the rudimentary pleasantries enjoyed as a popular art. But the French being folk, and being distracted by the carefree exoticism, the pretenses of the land *outré-mer*, do not seem to be yielding their preference for American

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Projected Background Anematography

A New Method of Making Composite Photographs

by **RALPH G. FEAR**

THE MOTION PICTURE industry is constantly progressing. New inventions, new equipment, new laboratory developments and methods, new production methods, in the studios, are constantly being revealed. Two of the outstanding developments of recent times are the High Intensity Arc Lamp, developed by subsidiary companies of the General Theatres Equipment Corporation, and the Fast Film of the Eastman Kodak Company, and the Dupont Film Company.

The development of the High Intensity Arc is a direct result of the advent of Wide Film, with its need for greater illumination. Fast Film can be attributed to the development of sound and the resultant sound proof stages, in which practically all productions are now made. Faster film became an absolute necessity because of the fact that the sound proof studio is entirely illuminated by artificial and generally incandescent lighting. These lamps generate a terrific amount of heat, and inasmuch as the sound proof studio is generally, and to all practical purposes hermetically sealed and, without proper ventilation, working conditions become intolerable. Fast Film has made it possible to correct this difficulty by eliminating a large percentage of the lights that were required before its advent. The two developments taken together have made other methods practical that were impossible in times gone by.

One of the most recent developments in this category is a new method of making Composite Trick Photographs. This new process which has taken the producing studios by storm and which is being used by practically all of the studios, at the present time, has been called the Synchro Projected Background Method. This new method was first developed and used by the Fox Film Company in Ralph Hammeras' Department. A great deal of experimentation and research work was done before this method of making Trick Pictures became practical. Inasmuch as this process makes it possible to save a great deal of money in production, and because of this saving I believe that a complete description of the equipment and method of use will be read by all who are interested in photography.

This method is not new. It was patented many years ago and the patents have expired. In order that studios, and others interested, may use this process without fear of patent litigation, I am disclosing the patents that are relative to this method and that anticipated this recent development. I am also appending a list of other patents on process work which should be of general interest to the trick and composite photographer. I believe that everyone interested in this type of work should secure copies of these patents for their own study and consideration.

The Synchro Projected Background is a name for a special type of Trick or Composite photography in which the foreground action takes place in front of a screen which may or may not be transparent and upon which a picture is projected from a motion picture projector. The common method of use is to use a standard camera that is synchronized with a projection machine. At the present time a picture is projected from a projection machine onto a translucent screen which is erected in back of the foreground action. I have prepared a diagram which shows the set-up. The translucent screen is generally made of glass that has been prepared for projection by grinding its surface or by coating it with a suitable material to give a translucent surface. The screen is generally of a very large

size being made of one piece of glass, and for this reason it is quite expensive. Other materials may be found such as silk which will answer for this purpose but it will take some research work to find a suitable material. In order to successfully use this system of making Composite photographs it is necessary to make some alterations on the standard machines used. Inasmuch as the camera photographs the projection background and the action in the foreground simultaneously no change or alteration is necessary in the camera equipment, but due to the fact that the projected picture has a low degree of illumination it is necessary to use fast camera lenses and low key lighting on the set. Of course, it goes without saying that super-speed films must be used with this process. The projected background picture must be perfect. The picture must be absolutely steady on the screen, illuminated to the highest brilliancy possible and must be synchronized with the camera so that the shutter in the camera is opened at the same time the shutter on the projector is opened.

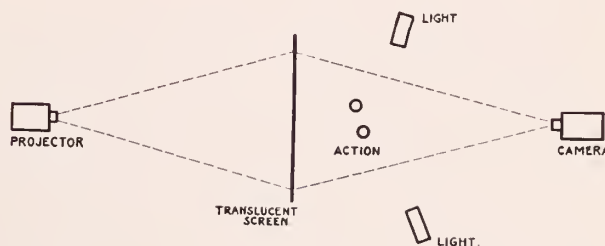


Fig. 1

A new projection machine should be used for projecting the picture on the translucent screen. The flicker blade should be removed from the shutter and where possible the intermittent movement in the projector should be altered and pilot pins installed, so as to hold the film absolutely stationary while the shutter is opened. A high intensity arc equipment with aspheric condensers should be used. The Ashcraft Automatic Arc Company built a lamp house equipment with this high intensity arc and aspheric condensers which gives a very brilliant oval spot on the projected gate. This lamp house has proven ideal for this service. The projection machine commonly used is the new type Simplex with back shutter. The projection machine should be equipped with an inter-locking motor instead of the synchronous motor commonly used. By using an inter-lock motor it is possible to set the camera and projector so that the shutters are exactly synchronized when in operation.

When properly used with an equipment as outlined above, this new method of making Trick photographs gives perfect results. If perfect results are not achieved the operator should look to the following causes for trouble.

1. Improper synchronization between the camera and projector will result in a photograph in which the projected background does not show. The remedy is to re-synchronize the camera and projector so that both shutters are opened at the same time. This can only be done when the machines are not running.

2. If the projected picture shakes on the screen and the background apparently moves, it indicates that the projection machine is at fault and that a new intermittent movement should be installed.

3. Fore ground lighting should be perfectly balanced and must be arranged in a manner so that no light from the fore ground lamps fall upon the translucent screen. Any light that falls on the translucent screen will destroy the projected picture at the point where the light falls onto it. The use of a colored screen, colored lights, and proper camera filters, will probably eliminate a great deal of trouble that might be caused from this source. Note: A study of some of the patents enumerated below will solve a great many of these difficulties.

4. Improper illumination of the background will result in a picture that is unbalanced. If a high intensity arc is used no trouble should come from this source, unless the fore ground is over lighted in which case there will be improper balance between the fore ground action and the background.

While all of the studios are using arrangements as shown in diagram No. 1, it is quite possible to use a new system that will dispense with the translucent screen and substitute a high reflecting opaque screen of the conventional type used in theatres. I have shown a method of doing this in figure No. 2. In this method a mirror is substituted for a translucent screen and the projector is arranged to project the picture through the mirror. Of course, this method is subject to alterations and other arrangements. There are certain advantages to using a system of this sort over the translucent screen and these are:

1. It is possible to use a standard screen of high reflecting power.
2. It is possible to arrange the screen in a way so that the fore ground lighting does not fall upon the screen and spoil the projected picture.
3. The mirror can be made at a great deal less cost than a large glass translucent screen.
4. Greater illumination may be used on the fore ground action without destroying the character of the photographed background.

The intelligent Cinematographer will be able to use both of these methods to advantage for various Trick and Composite pictures. New set-ups and new methods will occur to him as he becomes proficient in the use of this system. Some set-ups will require a translucent screen while in others the mirror arrangement may be found to be more practical.

Synchronized projected composite photographs are limited in their scope by the size of the screen used for the background. And because of this limitation it is more or less impossible to use the so called pan shots. As a remedy for this limitation the author would like to suggest, that, for background work, the background be photographed with a Grandeur or Wide Film Camera and a Wide Film Projector be used for the projected picture. By using Grandeur Wide Film it will be possible to use a much larger projected background. The two to one ratio of pictures used on Grandeur Film is also more suitable for this purpose than the three by four used on thirty-five millimeter film and this feature makes it possible to use a background sufficiently large so that the camera man can pan and follow his action just as he does now in ordinary production. Another great advantage in using Grandeur Film for the projected background is the better definition that can be secured in the projected background. I would like to recommend to studios and other producers who contemplate using this method of making composite photographs that Grandeur Film and equipment be used for the projected picture, for I am firmly convinced that the result will be far superior to those attained with standard film. Before leaving the subject of projected background I would like to point out still another method of using a projected background. In this later method a still picture is projected upon a screen instead

of a motion picture. At the present time there is only one company who makes a projector suitable for this work and that is the Ashcraft Automatic Arc Company. The Ashcraft still picture projector is furnished with a special water cooled lens which absorbs most of the heat of the projected beam of light. A high intensity arc is used in the projector. This method of using projected backgrounds requires special transparencies or slides which can only be obtained from the Ashcraft Automatic Arc Company. The picture on the slide contains no emulsion and the slide itself is made of quartz which is not affected to any great extent by the heat. It is impossible to use slides that have emulsion coatings as the heat destroys the emulsion practically instantaneously. While the special slides required are comparatively expensive, their cost is of an extremely low importance when compared with the saving in production costs, resulting from their use. In a very large number of cases the still picture projecting method is just as satisfactory, or more so, than the motion picture projection method. Needless to say the apparatus required in the later process costs substantially less than the apparatus required for the synchronized motion picture projected method.

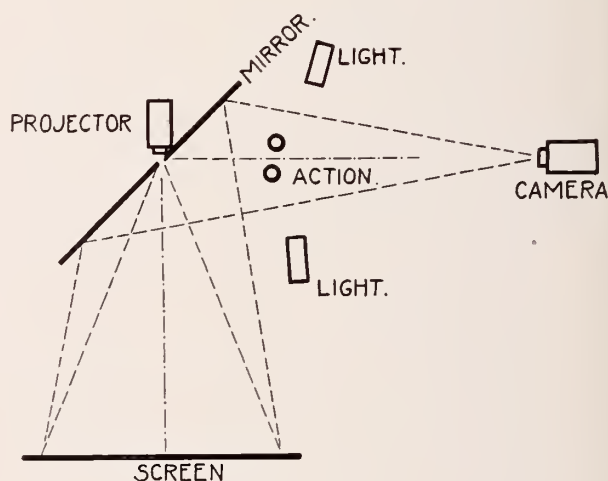


Fig. 2

One of the patents referred to in the beginning of this article, is number 4609, dated October 27, 1911 and granted to H. Sontag, under the title of Studio and Studio Accessories. The subject matter of the patent is as follows;

STUDIOS AND STUDIO ACCESSORIES.—An object *a* is photographed simultaneously with a background which is projected from behind on to a translucent screen *b* by a powerful lantern *d*. The screen *b* is colored with a color which has a weak chemical action, such as yellow, red, green, or the like. The rays for lighting the subject falling on the front of the screen are thus absorbed or rendered inactive, while the rays from the luminous image on the screen produce an image of the projected background on the plate. The object may be photographed in daylight, or may be illuminated by artificial light *g*.

The above patent is one of the very first issued on composite means of photography.

H. Goetz in patent number 147621 and 169233 shows two methods of making transparencies by using filters and various colored lighting.

G. H. Sutcliffe in patent number 175020, dated November 3, 1920 describes a method of making composite photographs in which "the background may be a picture, painting, or view, or a screen upon which cinematograph pictures are projected;

(Continued on Page 26)

Lens Testing

by **DR. L. M. DIETERICH**

Consulting Engineer

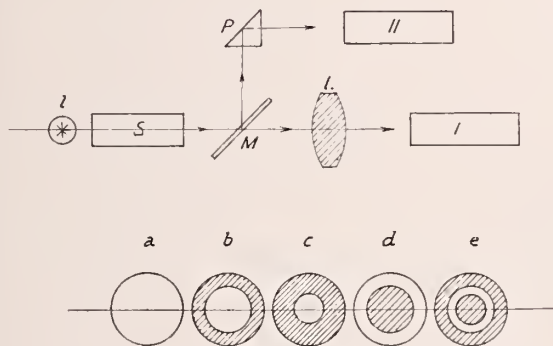
• Editor's Note: This is the third installment of a series of articles on Lens Testing by Dr. Dieterich. The first appeared in the November issue. In the first article Dr. Dieterich discussed the test of focus, giving the method and the equipment needed. In the December issue Dr. Dieterich took up tests for f Speed, Absolute speed and Light transmission. Back numbers may be secured by those who may have missed the previous articles.



Test No. 5 . . . Object of Test . . . Chromatic Aberration

METHOD OF PROCEDURE

1. Use given light source, *l*, spectroscopie *S* (Fig. 9). Place half (50%) silvered mirror, *M*, behind spectroscopie. Place test lens, *L*, in straight beam and project spectrum, *I*, on screen. Place fully reflecting prism system, *P*, in path of right angle beam and project spectrum, *II*, parallel, close and in register with spectrum, *I*. The difference of spectra is directly readable on the screen.



Upper, Fig. 9. Lower, Fig. 10.

2. If desirable, photographic plate may be placed in position of the screen and a record of exposure may be made.

3. This test is made under the following lens aperture conditions: *a*, with lens wide open; *b*, with half area stop; *c*, with quarter area stop; *d*, with half area matte; *e*, with quarter area matte and half area stop. These tests (Figure 10) show differences in tonal corrections, and locate their line values in the spectrum.

4. To determine actinic reaction of chromatic correction, these tests are to be repeated by using as light source sunlight and in succession, artificial light sources, singly and in such combination as finally determined upon for other reasons, as standard interior lighting for Multicolor.

Necessary Equipment

1: Light sources: *a*, standard arc lamps; *b*, standard incandescent lamps; *c*, Mirror or prism attachment for sunlight use:

2: Spectroscopie.

3. Half-silvered mirror and adjustable mount.

4. Fully reflecting prism system for beam displacement.

5. Screen. 6. Plate holder. 7. General combination unit mount.

Test No. 6 . . . Object of Test . . . Spherical Aberration

METHOD OF PROCEDURE

1. Rectangular pattern etched on silvered mirror is placed in camera with etched surface in same position as normal emulsion positive. This (mirror) pattern is lighted from the rear by suitable prism (or mirror), condenser and arc lamp system, and focused sharply on screen by means of test lens. Screen distance a constant. Spherical aberration is read by visual observation and measurement.

2. Test chart, preferably rectangular pattern, is now placed in identical position of screen; mirror removed from camera; standard shuttle inserted; exposure made, developed and printed.

Direct optical or projection investigation, by sight or measurement. Lens to be wide open at full *f* value.

Equipment Necessary

1. Motion picture camera. 2. Etched mirror, special shuttle and prism. 3. Condenser and arc lamps.

Test No. 7 and 8 . . Object of Test . . Astigmatism and Coma

METHOD OF PROCEDURE

Test lens is mounted in camera, camera turned in swivel mount to predetermined angle of deflection of optical axis of lens relative to optical bench center line. Pin point light located in optical axis of lens before deflection is sharply focused, exposure made, developed, printed. Optical and projection reading by sight and measurement.

Test No. 9 . . . Object of Test . . . Resolving Power

Photograph with motion picture camera resolving power chart with film of known resolving power emulsion. Chart distance of chart light source and film (+) constants. Develop and print. Investigate print with microscope and by projection.

Test No. 10 . . Object of Test . . Color Value

Same method as for Test No. 5. Use its results for direct reading.

Test No. 11 . . Object of Test . . Distortion and Depth of Focus

METHOD OF PROCEDURE

1. Repeat or use results of Test No. 6 for reading of pillow and barrel distortion.

2. For perspective distortion and depth of focus determination, place "fence", *F*, Figure 11, with distant background obliquely before camera, *C*, with fence post vertical, far end in optical axis of the camera (test lens) with near end visible on edge of frame. Read through finder and check by photographic exposures (optical and projection investigation of print) with lens wide open at 3, 6 and 50 feet focus, for both distortion and depth of focus.

3. Repeat with fence posts in horizontal position.

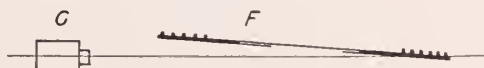


Fig. 11

(Continued on Page 42)

Making Movies in India

by **HAROLD C. SINTZENICH, A. S. C.**

DESPITE tremendous handicaps of every sort, India is rapidly becoming an important producer of motion pictures. The story is perhaps best told by her raw-film imports: three years ago, when I landed in Bombay to serve as Technical Consultant for Kodak, Ltd., India imported 500,000 feet of both negative and positive stock annually. Last year she imported 25,000,000 feet!

This tremendous increase is due to several factors, not the least being the advent of sound, for the vast Indian audience demands either silent pictures, or talkies in tongues that they can understand; as very few of India's 350,000,000 understand English, or any other European language, there is a wonderful opportunity for native production. And despite the many obstacles, native producers are taking good advantage of it.

The handicaps faced by these producers are appalling and the present volume of Indian production speaks well for the courage and enthusiasm of the native producers, technicians, and artists. All of these individuals are natives; some few of them fortified by experience in European or American studios, but the vast majority of them self-taught. Their technical facilities are generally limited, and their financial resources, judged by Hollywood standards, often equally so; but their enthusiasm, and determination to turn out moving pictures for the vast market at their door are boundless. This last is fortunate, for they are attempting to overcome problems which would dishearten most of us.

The technical facilities of the average Indian producing firm are about on a par with those of American studios of fifteen years ago. Daylight stages exclusively—elderly cameras of all nationalities—Ortho film—crude laboratories—and a climate about which volumes (all uncomplimentary) could be written!

Daylight stages are used for precisely the same reason that they were first used in Hollywood: there is the sun; why not use it? There is practically no artificial lighting equipment to be had, so even talking pictures are made under these archaic conditions. Orthochromatic film was, until lately, used exclusively because of the deep-seated conservatism of the native cameramen, who, having gotten thoroughly accustomed to the one type of emulsion, would see no reason for changing to a new and different one. Of late, however—during the past year or so—several of the more progressive individuals have changed to Panchromatic, much to the improvement of their work.

The makeup affected by the actors—all of whom are natives—is amazing. The majority of these people are of decidedly dark complexions; but since they feel that they are competing with American and European players, they invariably wear unbelievably white makeups, carefully disguising every part of their bodies with chalky-hued pigments.

The laboratories also suffer from the peculiar prejudices of the native workers. Machine development is unknown; so is the accepted type of rack-and-tank development. Instead, practically all developing is done in small, horizontal trays, slightly larger than the developing dishes used by a still photographer, and holding only one hundred feet of film. As I have said, the work is done entirely by natives, and since the natives prefer to sit, or rather squat on their haunches when working, they cling tenaciously to this method of developing film. During my stay in Bombay, I equipped a demonstration laboratory with vertical tanks and racks, and cooling tanks around the

solution tanks—for the heat of the Indian summer demands special precautions for keeping the solutions at a reasonable temperature. The native laboratory-wallahs came, saw, admired—and continued to use their own methods!

Acting and direction, too, are often rather less than up-to-the-minute. The former inclines to the flamboyant posturings of the pre-Lubitsch era, and the latter to a deliberate, slow-paced tempo that is characteristic more of British films than of Hollywood. Yet the audiences like the pictures—and several hundred million Indians can hardly be mistaken!

The advent of sound has done a great deal to modernize the technical equipment, but at the same time it has raised almost unsurmountable barriers commercially. The recording equipment, and the cameras used with it, are naturally modern. At present there is one RCA equipment, four or five Tanars, at least two Audio-Camex, and one Cinephon (the German variety, not the American Powers-Cinephone type) in use in India. These have naturally brought with them excellent silenced cameras, and will in course of time, I believe, similarly improve the laboratory equipment and methods, and in some cases perhaps introduce closed stages and artificial lighting. But they have also raised a grave problem as to languages.

In India today there are 350 distinct languages and dialects spoken! What, then, is to be done in order to make talking pictures commercially practicable? With silent films, the problem, while in itself difficult, was relatively easy. All that was necessary was an assortment of languages on the title-cards. As a rule, there would be translations of title into at least six different languages (beside English) on each card. This simplified things for the producer and the audience—but it made the theatres decidedly noisy: for the vast majority of the native population, despite the efforts of the British and of many native educators, is illiterate; so every native who could read felt it his duty to read each title for as many of his neighbors as could hear his voice! So in all the native cinemas it is quite the usual thing to hear a dozen or so natives reading off the titles in half a dozen different languages—and each shouting at the top of his voice to broadcast his message as effectively as possible. The effect has really to be heard to be believed.

The problem introduced by the talking picture can readily be imagined. A picture made in the prevailing language of one city or province will not be understood in other parts of the country—or, perhaps, even by large factions of the theatre-goers of its native city. On the other hand, of course, talking pictures will greatly benefit the illiterate classes, and eventually develop a universal Indian language. At present, however, the problem is to settle on which one of India's 350 languages and dialects is to be that universal tongue. Naturally enough, each producing firm feels that its own speech should be that one. The result is of course that both audiences and producers are suffering. Eventually, I believe that Hindustani will be the choice, for it is the only one that is spoken at all generally throughout the country. English is entirely out of the question, not only since but a few of the more educated classes speak it, but because it is, due to the present disturbed political situation, intensely unpopular.

Nevertheless, despite all of these handicaps, Indian motion picture production is growing in quantity, and steadily improving in quality. It is hardly conceivable that India will ever become an important exporter of motion pictures, but it is inevitable that she must eventually become a large producer in order to serve her own domestic market.

Photographing the Hoover Dam Project

IN WHAT doubtless will prove to be one of the greatest photographic achievements ever attempted in this era of modern development is an authentic record in motion pictures of the construction of the Boulder Dam project, plans for production of which are being made by the American Society of Cinematographers.

Appreciative of the historical, educational, technical and scientific values to be derived from motion pictures that would include an account of the step-by-step development of a project to cost \$165,000,000, and which will stand as a colossal accomplishment of modern progression, the Production Committee of the American Society of Cinematographers, under the leadership of Daniel B. Clark and Norman De Vol, conceived the idea of photographing this undertaking.

Extensive correspondence carried on by Chairman Clark and Mr. De Vol with the Bureau of Reclamation at Washington and at Hoover Dam resulted in the Society's decision to appoint Mr. De Vol to represent it in negotiating final arrangements. In an interview with Walker S. Young, construction engineer in charge of the project, the possibilities of making a motion picture record of the work were discussed in detail and a proposed program submitted by De Vol who was granted a permit by Engineer Young to photograph construction activities in any part of the Hoover Canyon Federal Reservation.

After more than a week spent at the site of the project, De Vol returned with a motion picture account of the preliminary progress, together with a comprehensive report and data concerning this gigantic undertaking. More than 1000 feet of test film was exhibited on Monday night, December 28, at a meeting of the Board of Governors of the American Society of Cinematographers, after which Mr. De Vol discussed with Society members the possibilities of the prospective venture. The result was that plans now are being formulated by the Society by which the detailed progressive construction of the project in motion pictures may be given world-wide exhibition under A.S.C. supervision. The association of this organization with so important a project as Boulder Dam is in accord with all activities where proven competence is recognized.

The cooperation of the United States Government and the Six Companies with Mr. De Vol as representative of the A.S.C. is the result of his painstaking work and conscientious effort to conform with their policies while photographing the preliminary progress of the project, and much credit should be given him for the sincere and business-like manner in which he has handled the proposition for the Production Committee of the Society.

Some idea of the enormity of the task of constructing this great project may be gained from the very accurate account brought back by Mr. De Vol, partial details of which follow:

Hoover Dam, the name of which was adopted September 17, 1930, in recognition of President Hoover's efforts in behalf of the project, is to be constructed in upper Black Canyon, on the Colorado river at a spot about thirty miles southeast of Las Vegas where the river forms the Arizona-Nevada State boundary. The vast project includes the construction of a dam, power plant and the All-American canal leading into Southern California.

With a precision that is identical with all governmental projects, Six Companies, Incorporated, in keeping with their tentative construction program, under the capable direction of General Superintendent Frank T. Crow, is employing more than 3000 men whose work is confined in an area less than two miles in length and 1500 feet wide. In this small area night and day shifts are engaged in the tremendous task of blasting through solid rock, four diversion tunnels, two on each side of the Colorado river and averaging more than 3000 feet in length with a diameter of fifty feet. These tunnels will divert the present flow of water and the tremendous floods that soon will be rushing down the Colorado.

Approximately eighteen miles of standard railroad already has been built on which are operated six-wheel gasoline motor-car engines employed to haul gravel to a plant built at a cost of \$500,000. Here it is cleaned, preparatory to being mixed with cement, approximately 5,000,000 barrels of which will be used in construction of the dam. It is interesting to learn that the site of this gravel plant, at the completion of the

(Continued on Page 31)



Here are entrances to three of the diversion tunnels now under construction at the Hoover Dam site.

Two New Dupont Film Products

Here is some information about Du Pac for color photography and Telefilm for aerial use.

by **V. B. SEASE**

THE LIGHT-SENSITIVE silver salts used in photography cannot record and reproduce scenes in their natural colors. They are capable of giving only gray tones corresponding to the brightness of the objects regardless of whether the objects themselves are gray or colored.

All practical schemes for reproducing a scene in color resolve the scene first of all into a number of color component images. For example, three successive exposures of a given scene may be made on three panchromatic films in an ordinary camera, the first with a blue filter, the second with a green filter, and the third with a red filter, over the camera lens. Since the blue filter passes only the blue rays of light and excludes the green and red, the first film will record only the blue objects in the scene. Similarly, the films behind the green and red filters will record respectively only the green and red objects. These three color-separation records are negatives which, upon development and super-imposition, will give a composite negative equivalent to that obtained with a single exposure on panchromatic film without a filter.

With these three color-separation negatives, a number of things become possible. Three prints may be made upon transparent supports, and projected simultaneously in superimposition upon a screen through the corresponding taking filters, whereupon the scene will appear in natural colors. Or, the prints may be suitably dyed, superimposed, and mounted as an ordinary photograph for the production of a color print.

Such a scheme is termed a three-color process. Through the use of filters corresponding to the three primary colors, all the secondary colors may be recorded and reproduced. For example, yellow objects in a scene will be recorded, partly on the red separation negative, and partly on the green. The appearance of yellow, when projected as described above, is due to the combination of green and red light from two of the prints.

It is necessary to expose all three color-separation negatives simultaneously in scenes involving action. This may be done with a special camera which directs the optical image into three paths through blue, green and red filters to three separate films.

Obviously, such a system for the production of the large number of prints required in the motion picture industry, involving three films and special apparatus, would be expensive and cumbersome to operate. Many schemes have been proposed for simplifying color photography for this industry. It seems imperative that three-color photography be used for general exterior work, since the eye readily recognizes unfaithful reproduction of blue sky, green foliage or flesh tints. But in many interior scenes where foliage and sky are absent, two-color processes have given very satisfactory results. Technicolor achieved considerable success with a two-color process making two-color separation negatives in a special camera, which recorded blue and green on one film and yellow and red on the other.

DuPac is du Pont's development of the bi-pack idea proposed many years ago for producing two-color separation negatives. It consists of two rolls of film, matched as to perforation dimensions, and designed to be run through the standard motion picture camera with only slight adjustments. The two films are threaded in the camera with the emulsion surfaces in con-

tact. The front film, the one nearest the lens, is sensitive only to blue and green rays, and has an orange filter associated with its emulsion coating. The rear film is panchromatic, that is, sensitive to all wave lengths of light. When an exposure is made, the blue and green objects are recorded in the front film and the orange and red objects in the rear film. This is possible, since the front film is insensitive to yellow and red, but is quite transparent to those rays, so that they pass through the sensitive coating as well as the orange filter, and effectively record the yellow and red objects on the rear film. The orange filter provides a clean separation by preventing the passage of any blue or green rays to the rear film.



A spool of Telefilm for aerial work. It is 9½ inches wide and 75 feet long.

Prints can be made from DuPac negatives in several ways. The method most commonly used is to print one negative on one side of double-coated positive film, and the other in register with it on the other side. The images are then suitably dyed or colored by separate treatment of the sides.

While DuPac has limitations regarding natural color reproduction, very pleasing and practical results have been obtained by those who have worked with a knowledge of its limitations. A number of leading companies have used it in making color sequences. The North Polar and Latin-American expeditions and the Vanderbilt cruise carried large quantities of DuPac when they set out recently.

Telefilm

Under the name Telefilm, du Pont has recently put out a giant spool of roll film—9½ inches wide and 75 feet long—for use in aerial photography. Large quantities of such film are used for aerial surveying, both by the United States Government and by private concerns. This film is panchromatic, special attention having been paid to its red sensitivity. Since the red rays penetrate fog and haze more satisfactory than the blue wave lengths, considerable advantage is obtained by use of a highly red-sensitive product. The film can be used at a greater height than others, and also gives better definition and detail of objects on the ground.

A Message to the Motion Picture Industry

from **JOHN ARNOLD**

President, American Society of Cinematographers

AS WE enter this new year, we find the motion picture industry passing through deeper and more troubled waters than ever before. Fresh upon the tremendous economic changes wrought by the advent of sound, with its colossal expenditures and far-reaching curtailment of income, has come a world-wide financial depression. The cumulative effect of these and other similar factors have brought us face to face with the gravest crisis our industry has yet had to face. The motion picture industry as we know it today is literally on trial for its life. Its future—and with it our individual futures—hangs in the balance.

The situation calls for heroic remedies. No aid can be expected from the outside. The great financial powers that have hitherto come to our aid in times of stress are themselves hard-pressed; the general public which supports us is in similar straits. We of the motion picture industry must work out our own salvation. Every one of us—from the humblest carpenter to the greatest star or producer—is directly concerned. We must help each other, for our own personal interests if not for that of the common good. We must realize that for once at least it cannot be a question of the individual, or the group, but of the entire industry. We must work together to give the industry the impetus it needs if it is to survive.

This impetus is twofold: primarily it must be financial—either savings or added profits by which to enable the individual producing organizations to bridge the gap until the turn of the economic tide; secondarily, it must be psychological—to enable the personnel of the industry to do their best work, unhampered by fears of discharge, lay-offs, or salary reductions.

For a long time executives have sought a means of accomplishing these ends. Negative costs have been pared to the bone. Production schedules have been shortened to the minimum. In many cases policies of constant, if reduced, production have been adopted to heighten the morale of the studio staffs. Sweeping salary-slashes have frequently been considered, but have generally been abandoned because of their bad influence on this same morale. But these measures have not been sufficient to check the downward swing. More radical steps are imperative.

The only remaining possibility is a series of drastic salary reductions—**unless the personnel of the industry can unite to devise and put into action some other plan.**

The American Society of Cinematographers has such a plan to offer. It is truly a heroic remedy, for it will entail the whole-hearted cooperation of every studio worker, from the highest executive down—and in some cases even temporary personal sacrifice. But it will, I firmly believe, start our industry back once more on the road to security.

Briefly, the plan is this: that every studio worker receiving a salary in excess of one hundred dollars per week—from laborers up to and including stars and executives—donate to the company to which they are under contract, their services for one picture. Nearly all of us can afford to do so; those who cannot can at least donate, throughout the course of a year, the three or four weeks' work that represents the time spent on this one picture. Others, whose contracts call for a certain number of pictures, can have an extra picture (paid for) added

at the expiration of their contracts. But all of us must keep in mind that this measure is not for the profit of the company, but for its safety, its life—for the very existence of the industry as a whole—and hence for our own individual security.

And what will be the result of such a step? Security for all of us, first of all, and the mental freedom that comes from the knowledge that our jobs are secure, that our salaries will be maintained as they are, without layoffs or reductions. We shall be sure of our jobs, and free to do our best work.

But will such a step be sufficient to accomplish all this? Unquestionably, it will. It will, of course, only apply to the major studios; each of these counts eight or ten major stars. If each of these stars, and the executive and technical staffs that produce their pictures would donate their services to produce one picture, the cost of which would be confined to the physical materials used—film, sets, and current—and menial labor, the net saving to the firm represented by the ten pictures would be approximately \$3,000,000. This in itself is more than could ever be accomplished by any conceivable salary cuts, even if combined with a reduction of negative cost. Adding to this the probable cash returns from the box-office, the project would mean a total cash saving and profit of approximately \$8,000,000. When figured for the six major studios that would probably participate in such a move, it would mean that the personnel of the industry had donated to the industry, for the common good, \$48,000,000. Such a sum is vastly greater than could be raised in any other manner. It would not go to enrich any one firm or individual, but to put the industry as a whole on a secure footing until the times improve. It would mean life for the industry, and safety for those who derive their livelihoods from the industry.

But what reason is there for taking such a step? Why should we donate our services to such a cause?

Let us look at the matter in a purely personal, selfish light. We have all of us spent years in preparing ourselves for the positions we now hold. Whether we be cinematographers, laboratory or recording engineers, art directors, directors, writers, stars, or executives, we have made ourselves specialists in one thing—motion picture production. We have spent years, effort, and money in fitting ourselves for our specialized work. We each of us represent a tremendous personal investment—and that investment will only bring us returns as long as we remain in the motion picture business. We can only remain in that business as long as it is sufficiently healthy to continue operations. Today the industry is a very sick business indeed. It rests with us whether or not it will emerge from the crisis as strong and healthy as before. It is therefore up to every one of us, as individuals as well as members of the industry, to strain every effort that the industry which has given us so much, and which can still give us so much, may recover as speedily and completely as possible. It is up to us to cooperate with our fellows that our own future may be made secure. Individual efforts are not enough: we must for our own selfish interests, cooperate completely, whole-heartedly, and enthusiastically. We must combine to pull our industry from the financial mire into which it is sunk, and to pull our individual and collective morale out of the slough of despond.

(Continued on Page 37)

HAL HALL

says

Happy New Year

WELL, here we are. Looking another new year right in the face.

What are you going to do in 1932?

Are you going to sit back and yap about the hard times, as so many people have done throughout all of 1931, or are you going to put on that big grin, tighten up the old belt, square the shoulders and plunge in with the idea that 1932 is going to be the best year of your life?

This is a darned good time to take stock of ourselves. Probe deep and see what we could have done last year to have helped lick this thing called depression. And then, when we have found that we slipped badly along the way, just hop in and refuse to make the same mistakes again. Strange as it may seem, the past year has been an excellent one for this magazine. And there is just one reason. When the sledding was the toughest, we buckled down and worked harder than we had ever worked before. And—depression or no depression—if you get down to hard work and plug with all your might, you just cannot help but get ahead.

A salesman for the Real Silk Hosiery people breezed into my office one day recently. He had a smile on his face that made you glad to see him. He was all business, and sounded a cheerful note along with it. I asked him how he found business.

"Had the best year of my life this year," he answered.

"How come?" I asked.

"Well, I call on more people now. Work three nights a week, and all day Saturday. And I have piled up more business than I ever did before".

There you are. And in the face of competition in the ten-cent stores which offer socks at ridiculously low prices.

Another friend of mine sells insurance. He told me the other day that he has rung up a record year for himself in 1931; has sold more life insurance than in any year since he started in the business. Reason—"Just decided that as this looked like a tough year I'd better work a bit harder. So I did."

Looks like it is a case of hustle, and then hustle some more, instead of sitting down waiting for a bunch of orating Congressmen to figure out a way to bring back prosperity. If we all do just that, I, for one, believe that it will be a Happy New Year.

Pictures and Profits

ANNOUNCEMENT the other day from New York of the fact that Metro-Goldwyn-Mayer and subsidiaries had earned \$6,257,998 for the year ending last August 31, proves a couple of points rather conclusively. One is that if a company makes consistently good pictures it will come pretty close to coming out with the balance on the right side of the ledger. The other is the you cannot dabble in production and exhibition very successfully.

M-G-M has given the public a very good picture product, and present indications point to a continuance of this calibre. The old public may be foolish in lots of ways, but it still knows what entertainment is; and if you give it to said public the seats in the theatres will be fairly well occupied. Many wise-cracking writers who wish to draw attention to themselves, take nasty shots at Mr. Mayer and Mr. Thalberg, declaring that they are dumb and what not. But these two gentlemen must be quietly laughing right now when so many film companies are reporting themselves in the red to the tune of millions.

Percentage

SAM GOLDWYN sounds a sane note when he advocates paying for picture stories on a percentage basis. Why not this method?

A writer toils for perhaps a year on an idea which finally becomes a play or a story. Why should a picture company risk a tremendous sum of money on the yarn? Also, why shouldn't the writer reap his just reward if the story happens to be one that "clicks"? And, why limit the percentage basis to writers alone? Let the big star take the chance along with the producer and the story writer. If said star's name is big enough to drag the shekels into the box office, then give said star a just percentage of the profits. If the star cannot drag 'em in, let the star take it on the chin along with the producer. This writer is of the opinion that there are any number of stars who may have been drawing cards in the past, but who are now dragging down big money on past reputations only. If this little matter could be straightened out there might be less financial worry on the studios—and those technical men who get more or less kicked around while being underpaid might have a chance to at least get a decent wage and work with peace of mind.

Pardon Us!

ON PAGE 39 of the December issue of this magazine appeared a brief article pertaining to Shutters in 16 Millimeter Cameras. In connection with this article was a table of shutter openings of the various 16 Millimeter Cameras. The Victor Cine Camera was given as 170°; but the manufacturers have informed us that the shutter opening of the Victor is 205°, and we gladly offer this correction, with our apologies to the Victor company for the error which was inadvertently made.

The Pictorialist Annual

HEARTY congratulations should be extended to the Camera Pictorialists of Los Angeles for the splendid photographic annual which has just come off the press. To attempt to describe the beauty of this book would be a bit useless. It is sufficient to say that it should be a delight to the eyes of every picture lover.

There are one hundred plates, representing the best prints submitted to the 15th International Salon. Printing and engraving are excellently done. Adcraft of Los Angeles published the book for the Pictorialists.



Solitude

Billy Fox



Sunset

Mike McGreal



Evening Clouds

Mike McGreal



Contentment

C. J. Meyer

Concerning Cinematography

Critical Comments on Current Pictures

by **WILLIAM STULL, A. S. C.**

DR. JEKYLL AND MR. HYDE

◆ By long odds the best-photographed picture of this month—or of many months—is “Dr. Jekyll and Mr. Hyde”. In it Karl Struss, A. S. C., has produced one of the most superb examples of cinematography yet screened. Layman and technician alike will undoubtedly appreciate the brilliant work of Director Reuben Mamoulian and Fredric March, Miriam Hopkins, and the rest of the cast; but to the cinematographer, Karl Struss’ flawless camerawork will inevitably be the most notable feature of a notable production. In it he has steadfastly refused to go to any of the cinematic extremes that such a story at once suggests, and has instead given the picture a restrained, yet always sympathetic treatment that will long be an example for his fellow cinematographers.

Furthermore, Struss has achieved the difficult feat of giving each individual scene the treatment most suitable to its mood and action yet retaining throughout the visual mood and quality needed to maintain the proper balance for a coherent picture. An example of this is found in the love scenes between March and Rose Hobart: these are treated with an appropriate soft quality that greatly enhances the excellent acting and dialogue, but which is yet in no way unpleasantly contrasting with the crisp, almost harsh scenes of the formal ball with which they are intercut.

The transitions between **Jekyll** and **Hyde** are very effectively handled; the first of them in particular being without doubt one of the most brilliant examples of perfectly coordinated photography, sound-montage, and direction ever made. One or two of the later transitions, however, particularly **Hyde’s** first transformation back to **Jekyll**, would have been more effective had the component lap-dissolves been longer and slower, for while the relatively short dissolves used indisputably speed the tempo of the sequence, they also tend to make the mechanics of the transformation more obvious than is wise.

Aside from this relatively minor detail, the only possible criticism is of the opening scene, in which for nearly a full reel the camera itself enacts the part of **Jekyll**. This is in itself an excellent dramatic conception, but it is executed, unfortunately, by means of a long sequence of trucking shots and free-head “pans” which, though expertly photographed, begin the picture with a confused note that is totally at variance with the deft sureness of the rest of the production. From this point on, however, the picture is a model of perfection in its freedom from unnecessary camera-motion, camera-angles, or sensational lighting-effects.

HELL DIVERS

◆ Despite story values, acting, and direction, aviation films will always be personal triumphs for the camera crew. “Hell Divers” is no exception to this rule. Despite a better story than most films of its type, and outstanding performances by Wallace Beery and Clark Gable, it is essentially a personal triumph for Chief Cinematographer Harold Wenstrom, A. S. C., Aerial Cinematographer Charles A. Marshall, and John Arnold, A. S. C., who personally supervised the process photography. Of the three, Wenstrom had undoubtedly the least spectacular opportunities; you cannot do a great deal with naval barracks, the interior of an aircraft carrier, or sets of such a nature—yet Wenstrom has handled all of these, as well as the exteriors and the more photogenic interior sets, both capably and artistically. An interesting part of his achievement is the fact that, despite the fact that the male members of the cast played their

parts without makeup, he has made them all look perfectly natural, and completely avoided the deliberately “un-made-up” look that is so often noticed in such instances.

Marshall’s aerial cinematography is more than outstanding. Periodically throughout the premiere performance in Hollywood, the audience broke into spontaneous applause at his superb work. More important than this, however, to the cinematographer, is the technical excellence of the aerial scenes, for they are beautifully photographed (never—even in the night sequences—overcorrected) and moreover, of action that is supremely difficult to photograph well.

The process work—of which there is a very great deal in the production—is the finest observed in a long time. It is literally indistinguishable from straight photography. There are several miniatures, most of which are excellent, although the one shot of Beery’s take-off from the beach is markedly poor. The scene showing the plane landing on the beach, it may be mentioned, is not a miniature; and reflects endless credit upon the unnamed naval flier who so skillfully set a fast-flying “ship” down on M-G-M’s back lot.

One of the introductory titles stated that the Navy Department cooperated in the making of the picture. This is obvious. Another equally obvious fact that was evidenced at the premiere was that the Navy Department somewhat regretted its generosity, for in several scenes showing airplanes landing upon the deck of the aircraft carrier a mat was suddenly run up into the picture to conceal the workings of the arresting gear. This is strange, for the Navy has previously seen fit to release several newsreel stories of carrier landings, and to print in such widely-read periodicals as the New York “Times” and the “Illustrated London News” many highly revealing still photographs of the operation. Yet at the last moment the wise ones in Washington would seem to have become frightened at revelations of the same thing in a film which was made to honor Naval Aviation!

RACING YOUTH

◆ Sometimes the managers feel called upon to rush production beyond reason; and when this is done, little more can be hoped for than that some sort of an image will eventually reach the screen. “Racing Youth” seems to have been made under this handicap. George Robinson, who photographed it, has a reputation as a capable cinematographer, and as a cinematographer capable of working fast and efficiently; but in this picture he appears to have been constantly pressed to meet the demands of an impossibly short schedule. The result is not creditable either to Robinson or to Universal. The picture may have been turned out on a money-saving schedule, but it was false economy, as the excellent cast, story, and direction are not shown to their best advantage.

HER MAJESTY, LOVE

◆ On the other hand, cinematography properly done can—and oftentimes does—save an otherwise undistinguished picture. The most recent instance of this is “Her Majesty, Love”. The story is negligible, the cast, though capable, has nothing to do, and the direction is heavy-handed and slow. But Robert Kurrle’s cinematography is outstanding. He invests the production with an air of importance solely through the richness of his camerawork. Even in the scenes played in “Lia’s” shabby apartment his work—without detracting from the intended shabbiness of the set—lends dignity to the production.

CAN YOU AFFORD TO IGNORE IT?

A NEW order is coming into being in the motion picture industry. Now actors work with greater comfort...less fatigue. The director's load has been lightened. The cameraman is creating new standards in his art. The laboratory is turning out better prints. The exhibitor is getting better pictures.

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EASTMAN KODAK COMPANY

J. E. Brulatour, Inc., Distributors

New York

Chicago

Hollywood

Wandering With Vanderbilt

(Continued from Page 9)

beaches well covered with cocoanut palms and other trees; the mountains rising quite abruptly from the beach.

Noumea is located on one side on land sloping back to the foothills, which are a half mile or so from the shore at that point. It has quite an industrial appearance; couple of fair sized smelters on the docks, some big warehouses and there are a number of good mines in the back country. The town has a population of 12,000 whites, there are more whites than natives, just the opposite to all the other places we have visited in the South Pacific. The town has rough unpaved sidewalks, dirt streets in rather poor condition and each house has a pipe running to a gutter in front of it which carries off the sewage water—there is a good slope to the streets. Near the center of town there are two blocks devoted to a park, just the native trees left standing with dirt paths running in all directions. Practically all the stores and houses in the town are of wood or galvanized iron; there are exceptions of course; there are a few nicely designed and well built buildings and out a little way there are some attractive dwellings. The Grand Central Hotel was recommended to us for dinner and is a rambling two story wooden building, very old fashioned. French is the only language spoken here although the proprietor of the hotel could speak English. We had a good dinner with lots of fresh vegetables. There aren't any street lights in Noumea so it was quite hectic stumbling along over the rough streets and sidewalks back to the boat landing six blocks away.

Another thing I must record, we passed another ship about twenty miles from Noumea, the first one in the 7,000 to 8,000 miles we have cruised since leaving Panama. We thought we passed another ship underway off Makatea Island the day we reached Tahiti but found out later she was just standing by waiting to come into the dock at the nitrate works there. This South Pacific Ocean certainly isn't overrun with traffic.

We had to check our camera equipment through customs at Noumea for the first time. The custom broker could speak English so he explained in great detail to the driver what we wanted to do and advised us to go to Saint Louis Mission at a native village ten miles out. It was a perfect day, in fact the weather here is just like California weather at its best in the spring and fall. As soon as we left the town the road was quite good and the rolling hills were covered with trees and grass. Some of the slopes were covered with vegetable gardens laid out in little squares. For long distances along this road one would have no idea they were on the edge of the tropics, all the trees of a temperate zone variety. Then the road would drop down near the shore line and we would be amongst some fine cocoanut groves.

The Catholic mission of Saint Louis is located on top of a little hill or sort of bluff with a marvelous view of the flat land and bay in one direction, the mountains rising up a half mile away in the other. It was founded in 1865, when the natives were wild and some cannibalism existed. It is a picturesque place; the little church and buildings around it; school for native boys; school for the girls; priests' living quarters and then a series of buildings jaggging down the hillside. A stream of water enters at the highest building and operates a water wheel which runs an old fashioned saw mill when they make lumber from logs; then the water drops to the next building and runs a wheel that drives a generator and so on down the line. They print a little paper once a week; grind their flour; run a little machine shop and blacksmith shop and in the old days, twenty years ago, used to make rum from the sugar cane. The priest who showed us around was a fine little fellow in his black gown and white helmet with his long beard. He couldn't speak English and our poor driver could interpret very little but our guide was full of fun and humor and we enjoyed the tour around with him. After we

finished our inspection of the place we returned to a vine covered porch and the missionary dugout a bottle of the twenty year old rum and gave us each a glass. I don't mind saying it was very good. He said they have just a few bottles left. About then the bell rang for the children to come back to school for the afternoon session and our host had to leave us. We went down the hill to one side to the native village which is located in a grove of tall cocoanut trees and a sort of big oak-like tree—a very pretty setting. The houses were quite well built of reeds, grass and palm leaves, most of them and the sidewalls were well plastered with mud. There was nothing unusual about the natives, looked just like American negroes and not dressed much differently. In every direction was a perfect background for a picture if we could just have had something for the foreground. Just to shoot them without anyone in them would not mean a thing even if they were good.

Australia

Our first view of Australia was a high point with a big light house on it very much like point Vicente at Palos Verdes. We picked up a pilot there and threaded our way thirty miles up a very wide shallow bay to the mouth of the river. Brisbane is located some six or eight miles up from the bay. The first mile or two of the river was uninteresting, rather flat and swampy, then it narrowed down to about 250 yards and passed through low hills and bluffs always swinging in wide "S" and reverse curves, seldom could we see more than a half or quarter mile of river ahead of us; like driving over a twisting winding highway in a car. For several miles before we reached our dock on each side of the river there are houses, sometimes a golf course, then a boulevard would parallel the river for a ways. Almost every house that was located on the river's edge had a little landing and a boat of some kind tied to it. It certainly is an ideal place for small boating; deep winding river with a wide bay just a few miles away. The current in the river is almost imperceptible. The river winds through almost the center of the city; a number of fine big steamers from all over the world are at the docks along side nearest the business section. We came on up a mile or so farther and are moored to a dock which is owned and occupied by a flour company. It is lucky because it is so clean. Across the river from us is a big school with a large green athletic ground like a park so we have a refreshing outlook that way.

September here is the same as March at home north of the equator. The weather here now is almost exactly like Southern California, warm but dry if the sun is out, quite cool if it is overcast. After sundown one of my heavy suits feels just right and I sleep under one or two blankets at night. First weather we have experienced like this since before leaving home. Being early spring here everything is green, fruit trees in bloom, etc., and it is hard to get used to it in September; also it seems queer to hear people talk about their summer vacations at Christmas time.

We are located within a few minutes ride of the center of town by taxi or street car. The business section consists mostly of wooden buildings with here and there a modern one of eight or ten stories. Very much like the style of the older California buildings, similar to the section of Los Angeles north of Second or Third Streets on Main, Spring and Broadway. They have two or three fine public buildings.

Everyone lives in single bungalows or houses with a good-sized yard so the residence district scatters over a wide area. Houses are all on the order of the old style wooden California houses invariably with a corrugated iron roof and usually set up on foundations six or eight feet off the ground for coolness and to be dry. It gets very hot in summer from all accounts, also is some warmer in winter as they raise bananas, pineapples and papayas here. Out of town in the hills and valleys, except where cleared away for farms or a pasture, the country

(Continued on Page 47)



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W. E. On Furness Liner

CW. BUNN, general sales manager of Electrical Research Products, has announced installation of a Western Electric Sound System on the Furness liner "Monarch of Bermuda."

An unusual feature of the installation is that, for what is believed to be the first time in the history of steamship building, engineers cooperated with the designers in planning for a sound system installation. The Western Electric engineers in London worked hand in glove with the designers so that space was provided for the sound system before the ship was built and the wiring was placed before the launching. At the same time the bulkheads were drilled and the screws set in place for the mounting of the equipment later on.

The "Monarch of Bermuda" will be used by the Furness line in its regular Bermuda service.

16 mm. Patents Company Plans to Issue Licenses

AS A holding company for patents on a new 16 mm. recording device and a projector, Jones Research Sound Products, Inc., has been organized with E. W. Jones as president. Hobart A. Simpson is secretary and Thomas D. Burhans treasurer.

First recording equipment will be ready within 60 days. The concern will issue licenses to build projectors as well as to record in studios and on trucks. Recording runs at 36 feet per minute, it is stated, and a sound track .024 of an inch is used. Volume and tone quality is equal to standard 35 mm. sound-on-film, Jones claims.

Talking Film Co. For Bogota

ACOMPANY to produce talking pictures is being formed in Bogota, Colombia. Senor Cuellar Chaves, the promoter, just back from Hollywood, states that he has the necessary staff and equipment and will bring them to Colombia as soon as the financing has been arranged. It is believed here that he will experience difficulty in raising funds.

One-Pound Sound Camera

ANDRE GOURRIANT, young French engineer and inventor, has patented a sound recording apparatus so light that it weighs but a pound. The need for a motor truck on outdoor locations will, it is claimed, be done away with by this invention, which is said to register sound clearly without any interference.

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and the
Motion Picture Industry in general

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American Record Corp. Has Unbreakable Disc

THE AMERICAN RECORD CORP., which has started production of records on 33 $\frac{1}{3}$ r.p.m. 10-inch discs for use by theatres as overtures and exit marches as well as when silent trailers are being run off, has developed an unbreakable record which will be introduced in the near future. Fourteen recordings are now listed by American Record, including four of Lew White at the organ, four of Sam Lanin's Orchestra, three of Vic Irwin's Orchestra and two of Roy Smeck, wizard of the strings. The company expects to release from 10 to 14 recordings a month.



Projected Background Anematography

(Continued from Page 12)

performing in front of a transparent screen upon which a moving background picture is projected from the rear."

J. S. Withers in patent 234542, dated February 25, 1924, describes elaborate methods of making composite photographs in which miniatures, projected pictures, and actions are combined, the various parts being photographed simultaneously. Various mirror arrangements are shown for combining the projected picture and the action. "A method of producing kinematograph films consists of erecting in natural size only a portion of the object, namely, that in front of which characters move, and in employing for the remainder models of reduced size, photographs, projected background diapositives or kinematograph pictures, the parts being photographed simultaneously or successively, the object by reflection, and the model either directly or by reflection, at suitably shaped or masked mirrors. In place of a model a picture, photograph or an illuminated diapositive or kinematograph film may be projected from the rear upon a semi-transparent screen."

E. H. Gamble in a patent number 6768, dated March 19, 1912 shows a very interesting method of making composite photographs using colored lights with the proper blue, violet, and red filters.

Other interesting patents are as follows:

19,823—Juhasz and F. Haushofer—September 6, 1911—**OPTICAL PROJECTION APPARATUS**.—Apparatuses for projecting kinematograph and like pictures wherein the light is first projected onto a translucent screen and is then reflected by a transparent mirror. The screen and the mirror are both arranged vertically and the latter is arranged so as to bisect or approximately to bisect the angle preferably a right angle between the screen and the single carrying a scenic background.

15,008—W. Hagedorn—June 28, 1911. Shows a method of projecting pictures on a translucent screen with appropriate figures in front.

7344—H. Blitz—March 28, 1913—**OPTICAL PROJECTION APPARATUS**.—Screen apparatuses for giving an effect of relief to kinematograph pictures comprises a screen on which the pictures are projected without a back ground from a lantern so as to be viewed through an inclined transparent or semi-transparent mirror in which scenery forming a background for the picture is reflected. The scene may be projected from a lantern onto a screen situated back of the scene. The space between the mirror and the screen is darkened.

5212—Thomas, F. D.—February 28, 1914—shows a method of combining real and living action with a projected background to appear as one composite whole.

Have You Ordered
YOUR CINEMATOGRAPHIC ANNUAL
Vol. 12?

.. In the Realm of Sound ..

Vertical Wax Recording

AN EPOCHAL advance in sound recording and reproducing was demonstrated last month to members of the Society of Motion Picture Engineers and the Institute of Radio Engineers, in the Engineering Societies auditorium by Halsey A. Frederick, transmission instruments director of Bell Telephone Laboratories. Using disc records cut by the vertical method, a new high power amplifier and latest types of loud speakers, Mr. Frederick produced an extraordinarily faithful reproduction of organ, orchestral, and vocal music, which his audience could scarcely distinguish from the original in either quality or volume.

Speaking also before the meeting, Leopold Stokowski, Director of the Philadelphia orchestra, explained the problems connected with recording music from the standpoint of the musician.

The vertical method of recording on wax discs differs from the so-called lateral method which is standard practice in the phonograph and sound picture industries in that the groove instead of wavering back and forth along an otherwise spiral path is a true spiral whose depth varies in a perfect pattern of the sound waves which have been recorded. Such a method was the original conception of Edison but lacking modern electrical technique, it was superseded by the lateral method. With the availability of microphones, amplifiers, and other electrical adjuncts to modern recording the old method now finds itself in the forefront of progress. Among reasons for its excellence is that the needle is no longer thrown from side to side by the vibrations, with the resulting over-travel and wear on the groove, but rather rides smoothly up and down. A close fit of the reproducing point in the groove—a requisite of the old method—was secured by incorporating a certain amount of abrasive material into the disc which would soon wear the steel needle to an approximate fit. This fit is not required in the new method and hence a permanent sapphire point is used in the reproducer with a resultant saving in weight of the steel needle and its clamping device. A further saving in weight is effected by an electrical reproducer whose moving system consists only of the tiny sapphire point, a coil of flat wire about an eighth of an inch in diameter, and a bit of thin metal to hold the whole in alignment. On account of its lightness, the moving element is able to follow vibrations up to 10,000 per second with entire fidelity.

On account of the abrasive material embodied in the older records, the reproducing system was designed to eliminate from the output those frequencies above about 3,500 cycles, where "needle scratch" was especially conspicuous. A new method of preparing the original wax for recording, and the use of a finer grained material for the ultimate commercial records make the new record extraordinarily free from this source of noise and thereby brings about a much greater range in volume from the level at which surface noise would intrude on the program to the point at which the moving parts would be overloaded. Further increase in volume is enabled by the use of a vertical groove in which there is no danger, in the louder parts of the program, of the recording stylus overcutting into the adjoining groove.

In copying from the original wax record, it has been the commercial practice to dust the wax with very finely powdered graphite. The particles of graphite were still large enough to contribute to the surface noise so that method has been abandoned in favor of depositing a molecular film of gold thrown

down by an electrical discharge in a vacuum. On this gold film a layer of copper is electroplated and the whole is then backed up by a lead alloy. Further operations of pressing the discs are carried out much as in the present process but the ultimate records are pressed in cellulose acetate which has a surface texture extremely fine.

The power amplifier, which is the last of several stages of amplification, consists of two 1,000 watt vacuum tubes connected in push-pull. Mr. Frederick explained that although its full 2,000 watts could be drawn upon if necessary, the reason for the use of such large tubes was in order that they might be very lightly loaded. With loud speakers responding to frequencies as high as 12,000 cycles, the spurious tones produced by a heavily loaded vacuum tube are distressingly perceptible and for this reason none of the tubes in the amplifying system are worked at more than a small part of their rated capacity.

Pacent Develops Combination Recording, Reproducing Device

PACENT announces in "Recordovox" a new combination recording and reproducing device to work with any radio receiver and phonograph. The attachment is for electrical reproduction of home records as well as the commercial and allows for the making of home records of voice, music or radio programs.

RCA In New York Church

SOUND motion pictures soon will be shown in the \$4,000,-000 Riverside Church, Riverside Drive and 122nd Street, New York City, of which Dr. Harry Emerson Fosdick is minister and which is considered to be one of the most imposing structures in the world. Negotiations have been completed between George J. Heidt, business manager of Riverside Church and RCA Photophone, Inc., for the installation of a complete Special Size sound reproducing unit in the assembly hall level of the edifice which has a seating capacity of about 500.

"We have purchased this equipment for entertainment and educational purposes," said Mr. Heidt, in announcing the transaction. "Among other forms of entertainment, we propose to present selected sound pictures to the children every Saturday afternoon. Religious subjects also will be shown from time to time."

A Novel Device

TECHNICIANS at RKO-Pathe recently figured out something unique in the line of camera "dollies". We all are familiar with the usual type on which is mounted a camera that can be wheeled about at will in following shots.

Well, at RKO-Pathe they have worked out a "dollie" on which is mounted the camera, a microphone and one large, incandescent light. This light makes possible the taking of closeups while the players and the camera are both in motion. The device is said to save considerable time and expense; for it saves set-ups that take so much valuable time. The RKO-Pathe publicity department is responsible for the statement that this new device saved seventeen different set-ups in one big scene in the making of a recent picture.

Laboratory Department

Conducted by EMERY HUSE, A. S. C.

Principles of Sensitometry and Their Practical Application

Part 9

IN THE DISCUSSION of intensity scale sensitometers various types of tablets were dealt with at some length. It was also pointed out that the motion picture industry makes use of photographic tablets in the timing of negatives for printing.

In dealing with either photographic or dyed gelatin tablets there is one thing which should be given some consideration. Reference is made to "color coefficient". Color coefficient may be defined as the factor by which the visual contrast in the negative is increased in the print due to the selective transmission of the negative silver deposits. If the negative deposits are neutral in color then the color coefficient is unity (1.0) because in this instance there is no increase in contrast in the print from such a negative. The color of the silver deposit in a photographic negative exerts a marked influence on the quality of the resulting prints. Negatives made with certain developers exhibit deposits of silver which are decidedly colored. They may be blue black, brown, or yellow, depending upon the chemical constituents of the developer used in the processing of the film. Of two negatives exhibiting differences in color, that of a color of higher wave lengths will produce, upon printing, a print of higher contrast. In other words, a negative with a yellowish deposit will give a higher print contrast than a negative with a blue black deposit. The reason for this can be determined after a consideration of the difference between the visibility function of the eye and the spectral sensitivity of the photographic printing material. It is quite evident then that in considering any type of tablet sensitometer it is important that its color coefficient be taken into consideration. Although two tablets may have the same visual density they may differ from each other photographically due to the selectivity of the deposits.

In the study of different developing agents measurements of the color coefficient factor has shown variations from approximately 1.03, which is fundamentally neutral, to values of 1.30 and higher. In the motion picture industry the average color coefficient is found to be in the neighborhood of 1.10 to 1.20. These figures are based upon the fact, as previously stated, that the color coefficient of a neutral deposit is unity.

Time Scale Instruments

In the consideration of time scale sensitometers such things as tablets and color coefficients can be relegated to the background. Time scale sensitometers are almost exclusively mechanical instruments which are capable of producing a series of exposures from a source of fixed intensity by a variation of the time factor. One of the earliest time scale sensitometers was designed by Hurter and Driffield in 1890 and these men with this instrument laid the foundations of modern sensitometry. They constructed their sensitometer so that the exposure time variations were given by a rotating sector disc similar to that shown in Figure 7. In this disc was cut a series of annular apertures decreasing in angular dimensions from the center outwards, the largest aperture being 180°, the next 90°, the next 45°, etc., each one being one-half of the angular length of the preceding opening. In the sector wheel used in their sensitometer nine steps were cut, thus giving a series of exposure times decreasing logarithmically by consecutive powers of two covering a range of 1 to 256 exposure units. Sensitometers

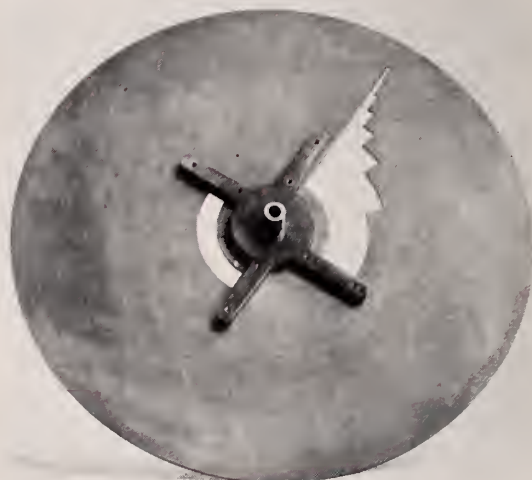


Fig. 7

eters of this type were for many years the standard instrument and it is only within relatively recent times that improved instruments have made their appearance. This sector wheel was housed in a light tight box at one end of which was the light source and behind the wheel, which was hand and, later, motor driven, was a slot for placing the photographic material to be exposed. The sector wheel used in the Hurter and Driffield sensitometer was rotated at relatively high angular velocity, in the neighborhood of 300 or 400 rpm. This subjected the photographic material to a series of intermittent flashes. Recent improvements in time scale sensitometers have done away with the intermittent exposure. It was assumed that the photographic plate would integrate these successive exposures and that the result would be equivalent to an exposure of which the time factor was equivalent to the sum of the times of the numerous flashes composing it. Photographic investigators found that the effect of intermittency introduced relatively large errors in sensitometric work and for this reason the present day types of time-scale sensitometers are of the non-intermittent, or continuous exposure, type.

In our next article sensitometers of the non-intermittent type will be discussed.



Mines Bureau Prepares Films On Auto and Allied Industries

THE United States Bureau of Mines, Department of Commerce, has prepared a series of educational motion pictures depicting the automotive and allied industries, with the cooperation of various manufacturing concerns.

The films are produced under the technical supervision of the staff of the bureau, the continuity being prepared in such a manner as to be entirely intelligible to the average layman. The films are loaned without charge and are used by many leading educational institutions, clubs, societies and like organizations.

What's What in Make-Up

● In the December issue Mr. Max Factor, make-up expert, discussed the basic principles of make-up, dealing with highlights and shadows, the nose, the eyes and the mouth. In this issue he continues.—Editor's note.

The Chin

This feature offers the fewest problems. There are two characteristic types of chins—receding and protruding. The protruding chin may be pointed or rounded. To bring it into harmonious proportion with the other features, shadow with several shades darker than the ground tone, blending the edges into the complexion. On round, protruding chins, apply shadow to center, spreading over entire area; on pointed chin, apply mostly on tip of point. To build up the receding chin, highlight the entire area of the chin by applying a much lighter shade than the ground tone of the make-up used.

Wrinkles

Wrinkles are creases in the skin showing the effects of age or the emotional experiences. The professional method of applying wrinkles is the most practical one. After the ground color has been applied, you locate the natural position of the wrinkles by distorting the face, forcing the wrinkles into them. Then while you hold them fixed, mark them.

On relaxing your face you have a pattern of the wrinkled expression you require. With a dark red or brown lining color (sometimes it is convenient to use a dermatograph pencil), you draw over the lines of your pattern to give them more striking effect. To achieve greater accent you must highlight every wrinkle.

Colors suggested for high lights are: Lining colors, Yellow No. 11 and White, No. 12. Colors for shadows or low lights are: Lining colors, Dark Brown, No. 2, Light Brown, No. 3, Blue-grey, No. 6 and Maroon, No. 9. Black or Brown dermatograph pencils can be used conveniently.

Crepe Hair

A braided hair material prepared for making beards, mustaches and eyebrows can be purchased by the yard, and comes in many shades. For ordinary use, a yard will last practically a year.

False Beards

For the average beard, a natural effect can be obtained if the crepe hair is built directly on the face. Beards, sideburns and mustaches give the face a natural, mature expression. The art of manipulating crepe hair will prove to be a great advantage in portraying many character parts. The rules below, combined with practice, will give you a workable knowledge.

1. When unbraided, the crepe hair is very curly and kinky. It must be straightened before using. First, moisten thoroughly. Then, while damp, tie each end firmly with string. Draw the hair out while it is taut and straight, stretching between two objects until it is dry. It is suggested that the hair be prepared in this manner the night before it is to be used.

2. When the hair is straight and dry, the quantity to be used should be combed. This is done on a hair-worker's hackle, or it can be done with an ordinary comb. Two or three shades of hair can be used in the same beard. The hair can be stacked neatly within convenient reach to be applied.

3. A thin coating of spirit gum is applied to the face where the hair normally grows. The application of spirit gum is an important detail toward creating a natural looking hair-line.

4. Laying the hair in the direction in which it naturally grows is the most important detail. It is a good idea to study a real bearded man and note in what direction the hair grows on different parts of the face. Under the chin the hair grows toward the front, and on the sides grows down. To imitate nature and to reproduce it as accurately as possible, every detail must be carefully observed.

6. When all the necessary hair has been applied, press the hair to the face with a towel, holding it firmly a few seconds. Do this to every section so that you are sure the hair sticks. Holding the ends of the hair in place with your fingers, comb out the loose hair very gently.

7. Now the beard can be combed and brushed as a real beard. It is then trimmed into any style with all the realism of a barber's art. A pair of tweezers will come in handy to remove odd hairs that affect the smartness of the hair line.

Mustache

To build a mustache, prepare the hair as described under the process for the beard. With your thumb and index finger remove sufficient amount of hair from your prepared stack. Trim ends on a bias. After coating your upper lip with spirit gum in the shape of the desired mustache, apply the hair, beginning at the outer corner of the lip and shingling up toward the center. When all the hair is applied, press a towel against your mustache so it adheres firmly to the face. Hold it in place with your fingers and with a comb remove loose hair. Then trim the mustache neatly with scissors. You can brush the mustache lightly with spirit gum, to set the hairs in place, and shape with mustache wax. This gives it a natural appearance.

Unshaven Effect

A grey-blue or red-brown lining color is the shade to be used for the effect of an unshaven face. The illusion-creating color is applied with a porous rubber sponge. Smear the sponge well with the color you intend using, then stipple it over the ground tone of your complexion; this is done before powder is applied. The effect of this illusion is created by stippling the lining colors in the normal area of the beard, creating a natural looking hair line. This effect can also be produced with crepe hair. Apply spirit gum over the entire area of the beard growth. Cut the crepe hair into small bits of short hair and place over the spirit gum, being sure to distribute it evenly.

Nose Putty

A soft, plastic material, sometimes called Nose Paste, used for many other purposes than that which its name implies, is effective for nose work. For changing the contour of the nose or building up the nose into desired shape and for changing the chin it is excellent material.

Nose paste can effect a complete disguise in make-up by changing the entire expression. It is without a doubt the finest means to conceal your natural eyebrows. The nose paste forms a hairless base and is completely concealed by the ground color of your make-up. It is then powdered, making it possible to apply any type of eyebrow with a dermatograph pencil or crepe hair.

Note:—Before using nose putty it must be made pliable. This is done by taking sufficient of it and kneading between the fingers until it is very soft. Then it is ready to be used.

In the Art Director's Field

Motion Picture Sets*

by HANS DREIER**

DESIGNING a motion picture set is illustrating a story. The author of a novel describes, by means of words, the environment in which his characters act, in order to establish in the reader a mood characteristic of the scene of action. By this means he brings to the reader the proper atmosphere for the story.

This is likewise the function of motion picture sets. But while the writer has the world at his disposal and is limited only by his imagination, the designer of motion picture sets has to reckon with time, space photographing, sound recording, and commercial economy.

Reasons of practicability demand that motion picture sets be constructed of light-weight materials, which are made to appear solid and real by means of technical processes. To the eye, and more so to the camera, flimsy structures on the sets appear to be real rooms or buildings, etc., of any desired elegance, dilapidation, or age. They are first planned and constructed in the form of sketches or models, in order to be sure to obtain the desired appearance and to create the proper mood when finally presented on the screen to the audience in the theatre. These are the ultimate objectives to which everything in the conception and construction must contribute.

The materials of construction vary according to the effects desired. Flats of standard sizes are used for sets that represent rooms or buildings having finished surfaces. They are covered with veneer or, as acoustical requirements demand, with a soft composition board that prevents reverberation. When the surfaces are to appear as if made of brick, stone, or rock, casts of the real materials are made, and the reproductions are applied to the set. Plaster-coated wallboard and wood is used frequently for panels. The painting, which is of the greatest importance in producing the final character of the set, provides the finishing touch.

After the set has been conceived according to the purpose of the story and the intended mood, it is laid out according to the camera angles and the action which is to take place in it. The lens of the camera determines the horizontal and vertical dimensions of the set, and angles made of celluloid are used to fix these dimensions for all camera line-ups necessary to cover the action. When such points are settled, the designer begins work on the drawings, which are very much like those drawn by architects. Places for lights necessary to illuminate the set for photographing it must be provided, and, in consideration of the process of recording the sound, acoustic difficulties must be avoided. Finally, the proper furniture and properties are located, and the set is ready for use.

Time and space are of great importance in constructing sets, and are very vital economic items to be considered. For this reason a great number of photographic and scenic "tricks" have been developed. These may be grouped under two main headings: (a) the miniature processes, and (b) the processes employing transparencies. The latter is a photographic process

for providing moving backgrounds. The actors are later superimposed on the background by a chemical process. This method avoids the necessity of constructing a large set. The miniature, however, is designed and constructed.

If a given part of a set is duplicated on a smaller scale and the replica is placed between the camera lens and the original set, preserving the original lines of sight emanating from the camera, the photograph of the portion in miniature will coincide exactly with that of the original set, and it will not be necessary to use the large set at all. This results from the fact that two-dimensional photography does not register the physical distance between the actual set and the part made in miniature. Fig. 1 illustrates the principle.

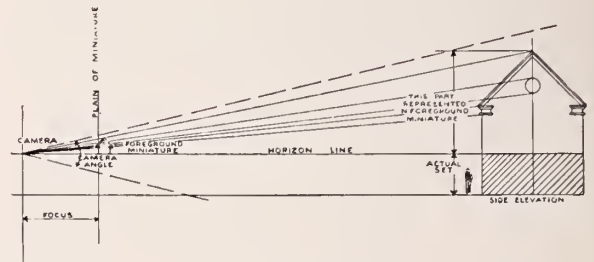


Fig. 1

In order to carry focus, the miniature in the foreground must be placed at a certain distance from the camera lens. This distance determines the scale to be employed. Theoretically, an indefinite number of scales are possible, but economic requirements make it necessary to choose a scale which will bring the focal plane as close to the camera as possible.

The miniature may be an actual construction; it may be simply a miniature scene painted on glass; or it may involve a combination of both processes. The technic of using miniatures in this manner, the construction, matching of lights and shadows and of distances, is highly developed, and the process can be made to provide perfect illusions of great depth and height.

The designer, when illustrating the background of a story, must explain his ideas by means of drawings in which he represents the desired mood by indicating the apparent heights and the camera angle, balancing the proportions, lights, and shadows in the desired manner. But a sketch shows only one angle; the rest must be explained by a floor plan. It is often difficult for those unfamiliar with the process to obtain a clear idea of the final appearance of the set from all the angles at which the action is to be viewed. A model does not easily influence a mood or create an atmosphere because the light effects and the miniature furniture are not convincing, and the small scale of the set gives one the feeling of looking at a doll-house. The sketch always provides the best approach to an appreciation of the set as an illustrating background, while the model is indispensable where complicated ground plans, combinations of several sets, several floor levels, and action based upon these are required.

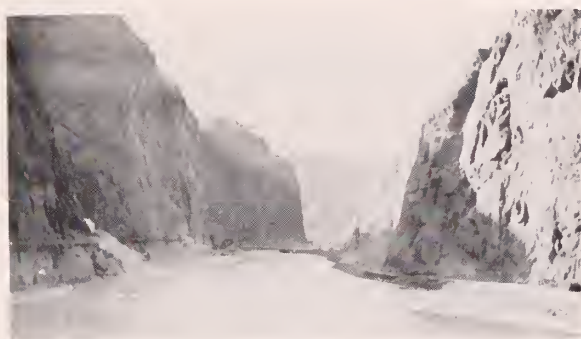
* Presented in the Symposium on Studio Practices at the Spring, 1931, Meeting at Hollywood, Calif., and printed through courtesy of S.M.P.E. Journal.

** Paramount Publix Corp., Hollywood, Calif.

Photographing Hoover Dam

(Continued from Page 15)

project, will be submerged in water more than 200 feet deep. The purpose of the project is flood control and general river regulation, irrigation, silt control, power development and domestic water supply. The total cost of \$165,000,000 will be divided as follows: dam and reservoir \$70,600,000; power development \$38,200,000; All-American Canal \$38,500,000. The height of the dam will be 730 feet above foundation rock. It will back up the water for a distance of 115 miles, and will vary from several hundred feet to eight miles in width, forming a lake with water sufficient to cover the state of Connecticut to a depth of ten feet.



Where the Dam will be built.



Mr. De Vol at the Hoover Dam site.

The power plant, estimated annual income from which is \$6,550,000, will be capable of developing 1,000,000 horsepower through the installation of twelve 85,000 horsepower hydraulic turbines.

The All-American Canal will connect with the Colorado river some distance below the dam, beginning with a maximum section of about 200 feet in width at the water surface, 134 feet bottom width and a depth of twenty-two feet. From a length of seventy-five miles it will be reduced as tributaries leading into Coachella and Imperial valleys, and finally will lead into the Metropolitan Water District of Southern California, some 300 miles distance from the Colorado. More than 65,000 acres of Imperial Valley's present irrigable area can be irrigated by this canal; while Coachella Valley near Indio, with an irrigable area of 72,000 acres, will be served by one of its tributaries. According to preliminary estimates, approximately 2,000,000 acres of irrigable land below Boulder Canyon reservoir will receive the benefits of this gigantic project.

The progressive motion picture records of operations which Mr. De Vol will take periodically, will first be submitted for approval to representatives of the project.

Illustrated accounts by Mr. De Vol of the project's progress will appear from time to time in the American Cinematographer.



All Electric Amplifier Offered By Radiart Corp.

A FULL RANGE all-electric theatre amplifier of rugged construction and of simplified unit design that is said to have the highs and lows, and plenty of volume, is being marketed by the Radiart Corp., manufacturers of quality sound equipment and transformers. Among outstanding features claimed for it are the following:

The device is built in acoustic compensator for meeting any unusual acoustic conditions in theatres. By an advanced design circuit incorporating the '45 tube in coupling to the 2-'50 tubes tremendous output is obtained without hiss or tube rush, with equally excellent quality at full, half, or low volume. Ample gain is available at all operating conditions such as weak photo cell, dark film, or other unusual conditions. All overtones are maintained. With the full range frequency reproduction all lows and highs are included to give necessary overtones for natural sound reproduction of both music and speech.

With this amplifier it is not necessary to use outside matching transformers. The amplifier has output impedances of 9 ohms, 16 ohms, or 500 ohms, so that connection can be made directly to all popular speakers without outside matching transformer. Connections are available for a 4000 ohm high impedance monitor speaker. This winding is separate and will not affect the volume or fidelity of the output to the main theatre speakers, the company declares.

BUSINESS RELATIONS ARE SATISFACTORY ONLY WHEN ALL PARTIES INTERESTED ARE BENEFITTED

Agfa
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Season's Greetings

to the Motion Picture Industry, and takes this opportunity to hope that their products and service may contribute substantially toward the realization of a mutually prosperous New Year.

AGFA RAW FILM CORPORATION

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Amateur Movie Making

by WILLIAM STULL, A.S.C.

ONE of the most trying situations that can afflict a writer is that of being incapacitated just before the "deadline" of his publication, and being, therefore, unable to perform his usual services to publishers and readers. Therefore, when this happened to me last month, I was greatly relieved to learn of the highly competent way in which my friend Hatto Tappenbeck, A.S.C., had stepped into the breach for me. Not only did he provide an interesting article for this department, but a practical one, as well. No cinematographer—professional or amateur—can afford to waste film at any time: yet he must constantly carry on experiments with new emulsions, filters, etc. if he is to keep himself up to date in his craft. As Mr. Tappenbeck suggests, the various miniature "still" cameras using short lengths of 35 mm. film offer an ideal means for doing this. This cost is small, the results are excellent, and—most important of all—the photochemical conditions are identical for both the still and cine cameras. This last is true whether one uses 16 mm. or 35 mm. cinema apparatus: for the emulsions coated on duPont's 16 mm. and 35 mm. negative stock are identical, and the Eastman 16 mm. reversal emulsions likewise correspond to those on their 35 mm. negative stock, although they are chemically slightly different, thanks to the requirements of the reversal process. To all practical purposes, however, 16 mm. and 35 mm. emulsions of the same manufacture are identical. For a more detailed and technical discussion of the matter, I recommend "Making Tests with a Small Camera" by Jackson Rose, A. S. C., which appears in Volume Two of the **Cinematographic Annual**, just published.

Saving Film with Scripts

But this business of saving film is quite as important when you are actually using your cine camera as when making filter, film, or exposure tests. Or, to put it differently, it is just as important to make every foot of film used count as it is to avoid using unnecessary footage. This is particularly important to those who are producing pictures to be entered in the **American Cinematographer's** contest.

There are many ways of doing this; all of them must be known and used if the completed picture is to be successful. There are scores of details of direction and cinematography—to say nothing of editing—which make for conciseness in the finished production; but first of all comes thorough preparation of the story before it is filmed.

Every film has a story to tell. It may be a dramatic film, in which case the story is self-evident. It may be a travelogue, a documentary film, or a family record, in which cases the story is not so obvious, but still—**there must be a story**. In any event, no matter what type of picture you are making, or whether it is for the contest or for your own pleasure, you will attain the fullest measure of success only if you know in advance what you are going to shoot, prepare a definite plan of action before you start to photograph, and adhere to that plan during the actual making of your picture.

It is possible to do this with only a clear mental picture of your completed film; but it is far wiser to have some sort of a written outline to work with. Otherwise, you are trusting far too much to chance. You will probably get a number of individually effective scenes—but they will probably be just that: individual scenes, not a coherent picture. If, on the other hand, you take the time to plan your work in detail before you shoot, you can hardly help making a concise, coherent picture. And this is true whether your picture is a drama, a travelogue, or just a family record.

How To Do It

The first step is to have your story. This can be almost anything you desire: a dramatic plot (your own or taken from a novel or short story), or a mere outline of what you propose to do, if your film is a travelogue or family record. This story should be written down in synopsis form. It is the basis of any picture, of any type, whether professional or amateur. It is not written in scenario form—divided into scenes—nor in rhetorical story form: it is merely an outline of what is to happen, with few, if any of the details more than barely indicated. But it is a vitally important part of your preparation. Speaking of this synopsis, Clara Beranger, the well-known scenarist, said in a lecture given a few years ago:

"There is a distinction in writing for the screen and writing for the camera. Certain people who can visualize how a thing will look on the screen cannot put it in scenario form.

"First we prepare what is called the 'treatment'—the first long synopsis. This is for the screen and not for the camera. It hasn't any of the technical details in it. It is a straight, dramatic synopsis, but it gives some of the atmosphere, the setting, and a delineation of the characters. From this synopsis the director, and frequently the producer or supervisor can tell whether the story will make a good picture."

After this synopsis or 'treatment' has been completed, you are ready to begin to write for the camera—in other words, to write your script or scenario. In professional practice, you begin with a fairly rough script, and then, through long and sometimes painful consultations with the director, art director, technical director, director of photography, and director of special effects (not to mention the various financial gentlemen), you slowly evolve the final shooting script. In amateur practice, however, this evolution is simpler, because, unless it is a club production, you are likely to be director, cinematographer, and art-director as well as scenarist. Therefore, your first script can well be your final one, unless you find revisions necessary for practical reasons.

Probably the simplest method of writing this script is to begin by blocking your synopsis into sequences—groups of scenes embodying related action, and taking place on a single location. Then take each of these sequences, and reduce it to the scenes of which it is composed. Begin with the basic long-shots; then figure out just where the action demands closer scenes—medium-shots and close-ups. Then find where you need titles, and indicate their places, and approximate wording. Do the same for inserts, such as letters, telegrams, etc. Then assemble all these in your final script, in their proper order, with the action taking place in each scene well sketched out, and camera-angles, etc. clearly indicated. Give each scene a number, for reference not only during production, but in editing. And there your script is complete.

Writing such a scenario is not difficult in itself, but writing one that can be easily and efficiently picturized, and that will make an interesting picture, is. My personal advice would be not to attempt to write your own scenarios at first, but rather to use some of those already available for amateur use until you have become accustomed to using a script to shoot from, and to thinking in terms of camera-action. Then you will be ready to try your own hand at scenario writing. If you try to do so before you have this experience, you are almost sure to fall into some of the many pitfalls lurking to entrap you. The first of these (and the worst) is that you will write a more

(Continued on Page 46)

Lens Problems and Properties

by **HATTO TAPPENBECK, A. S. C.**

DURING these winter evenings, when we are staying at home more out of necessity than from choice, we can now enjoy over again the happy days we spent in the outdoors and the summer's sunshine. Our home movie projector brings those precious memories back to us. Reclining in a comfortable chair and amidst friends and family we are reviewing our own cinematographic efforts and enjoying the films which our visitors brought over. Scene after scene is projected. Interesting shots to the intimate circle of spectators!

Some of the scenes are discussed for their photographic merits, some for their unusual angle or effect. New plans are made for the coming year. Various camera problems are brought up during these meetings; but least of all the topics that of lenses, is touched.

And yet, our photography differs a little from that of our friends. Some shots seem to be more pleasing than others. A comparison of long shots and close-ups shows that the handling of the scenics is superior in our pictures, while the others apparently have more luck with their close-ups. We do not believe it is luck and try to find out which methods they use, that make their scenes better than ours. We only come to the conclusion that the same means and skill are employed. We all have cameras of a reputable make. Naturally you assume that you get a good lens with it. There is no doubt that you do. But there exists a great variety of GOOD lenses, each intended for a specific purpose. It is perhaps the most essential factor in buying a camera, but this important item is the least considered of any.

The manufacture of lenses is a very scientific, intricate, and delicate work, in which various problems have to be solved according to the most desired specifications. It is not possible to incorporate ALL good qualities in ONE lens, because some of them are contradictory as we will see. Therefore a sacrifice has to be made one way or another. This is one of the reasons for the difference in the leading makes of lenses. A set of lenses with different properties is necessary for covering all phases of cinematography correctly. However, this statement should not worry the person who has only one lens at his disposal. If that lens is properly chosen—and that is generally the case with the lens recommended by the manufacturer of the camera—it will render very satisfactory all around service.

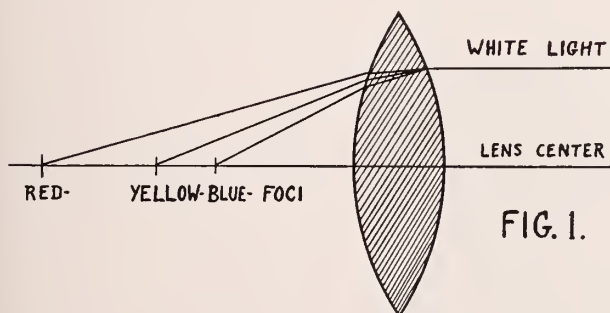


FIG. 1.

The fixed or movable focus of the lens is frequently the only feature considered at the time of the purchase of a cine camera, and the issue is usually decided by the price. The former requires less effort and knowledge in handling. It gives good service, but has its limitations. The better lens does everything the cheaper one will do, and in addition more on special

occasions. Let us see why this is, and what other properties, not so obvious, are built into the various lenses!

Nearly all lenses supplied with the better grade of cameras are achromatic, i. e. corrected for color. The colors send out rays of different wavelength. The optical nerves in our eye in turn respond to these wavelengths and produce the color sensation. Automatically the eye takes care of the correct focus. This is not the case if the light rays are conducted through a single lens. Then the different colors will focus each on their own particular plane as is shown in Fig. 1. The blue rays of the spectrum meet closer behind the lens than the yellow and red ones.

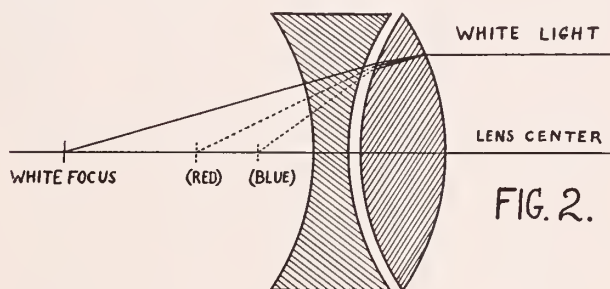


FIG. 2.

If we focus an image on a ground glass we make use of the yellow rays, while the emulsion of the regular orthochromatic film is particularly sensitive in the blues and therefore requires a little shorter distance to form a sharp picture. Thus the two images do not correspond. This is corrected in the lens by using two pieces of glass ground in the way indicated in Fig. 2. The two lenses are made of crown- and flint-glass respectively, whose properties compensate the various color rays and in this way effect the achromatic- or color-correction.

From the above it is clear that by using the same lens with orthochromatic or panchromatic film a slight difference will result in the focus of the negative, which may be very pleasing at times due to the soft diffusion it creates.

At the same time in such lenses care is taken of the spherical aberration, which is the tendency of rays of the same color

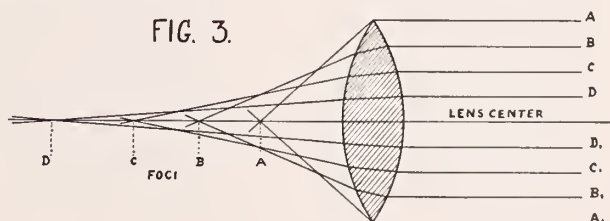


FIG. 3.

to come to a different focus when passing through various parts of a lens. Those rays nearer the center of the lens will converge a little further on the axis than those passing nearer the edge, Fig. 3. Stopping down the lens will partly correct this error by increasing the depth of focus. This is done, however, at the expense of the speed of the lens.

The aberrations mentioned are most likely to be observed in cameras with lenses of the fixed focus type. Aside from the spherical error the single lens has the very unpleasant property of distorting the straight lines which may be near the sides of your picture. It is particularly noticeable where high build-

(Continued on Page 38)

Home Lighting

by JACKSON J. ROSE, A.S.C.

● This is the first of a series of practical articles written expressly for the amateur readers of this magazine by a group of the best known professional motion picture cameramen in Hollywood. Mr. Rose, the author of the first article, has been photographing big productions for the past twenty years—The Editor.

THE HOLIDAY season is past, but the weather still keeps you indoors at times when you would like to test the new cine equipment you found among your Christmas gifts. This is a good time to start right in the home and make good that New Year's resolution "To produce better pictures during the coming months." Many of you have undoubtedly received some new lighting equipment, such as the Bell & Howell incandescent lights, the "Little sunny twin" arc light of Westphalen, the Halldorson home portrait lamp, or the Testrite electric equipment. These and many other makes have been designed purposely for use in the private home.

In this article the writer will give some valuable hints on lighting as it is used in professional work in the Hollywood movie studios, and which may be applied without difficulty to the cine work in your own house. Lighting a picture set is really not such a cumbersome task as it may appear at first sight. Not a great deal of work is required, and with very little equipment some attractive results may be had. Two or three light units of about 500 watts each and perhaps one or two stereoptican globes of 250 watts to replace those lamps used in the regular lighting fixtures is all that is necessary for the average home movie. The written instructions in lighting can only guide you in your efforts, but here as in every other work skill comes with practice!

When using electric lights, care should be taken not to overload the house circuit. A 500 watt lighting unit uses about as much current as a six pound flatiron or the average one coil radiant electric heater. It is safe to figure one ampere per one hundred watts. That allows five to six light units on a circuit which is protected by 30 amps. fuses. Assuming that we are photographing at the normal camera speed of sixteen pictures per second we need a good lens with an opening of at least F:3.5. The new supersensitive panchromatic film eliminates any difficulty in getting enough exposure and good results in the home.

An interesting scene may be photographed when some friends drop in for a game of bridge. The whole group presents an attractive picture when taken from an angle diagonally across the table. Two of the players are sitting full face towards the camera while the others appear in profile. The lights are generally already concentrated on the group around the card table. All we have to do is to accentuate this natural lighting by replacing the globes in the regular fixtures with stronger ones and by adding a little front- or back-light as the case may require. If there is a light directly above the center of the card table, we have a splendid means of creating an artistic effect by putting the principal light source there.

Many homes have a beautiful

fireplace in the living room. This gives a splendid opportunity for a little scene as well as artistic composition. The chief source of light should come from the fireplace itself, augmented by some light unit near it or hidden behind the logs, if the fire is not actually going. In this one case only the light should be placed low. In all others the light should come slightly from above the subject, the most natural way of lighting. In addition to the main source of illumination some front light near the camera should always be added. This eliminates too great a contrast of the picture by toning down the shadows.

For a shot of a person sitting in a comfortable chair under a reading lamp, a 250 watt globe assisted by some light coming from the direction of the camera is all that is required. Short flashes of such and similar pictures which show each member of the family at their usual occupations or hobby make up the most interesting reel which can be mailed to friends and relations.

A lively scene is presented in "The family at the dinner table," be it on an ordinary day or at the special occasion of baby's birthday. Put some stronger lights in the regular fixtures, add a unit in the back or in front wherever the shadows need some relief, and you are ready. Never use more than 250 watts in the ordinary lamps as a higher wattage will result in serious damage. The heat from those concentrated filaments is too great for them.

Painstaking care should always be taken that no direct rays from the lights reach the lens. The lamps are placed in such a way that they are hidden from the camera or so far outside the picture angle, that it is possible to put a proper shield in between the light and the lens. Only very small globes of low wattage can be photographed without causing halation of the film or a flare of the lens.

Some of the most delightful pictures can be gotten of young children in their everyday surroundings. They may be playing "school" with neighbor kids or teaching their dolls. Or they play "house," or, if they are a little older, change the living room into their home state or the whole U.S.A. which is crossed by a network of rails. The trains are running from the East to the West, from one corner of the room to another, with stops at several "towns" in between. Soon the visiting uncle or friend of the family gets interested and enjoys it just as much as the youngsters. There and then is your chance to get some very interesting shots with your cine camera.

And don't forget the pets of the household! They are part of the family and can be used easily to provide the comedy relief. They make apt pupils in the school scenes, or the cat or dog is investigating the workings of the locomotive, causing the train to derail.

For lighting all these shots not a great deal of experience or skill is necessary. The lights should be placed so as to strengthen the regular ones rather than using them to create special effects. The more natural the source of



Making a Home Movie

the light looks, the better the picture will be! Always shoot the interiors with a wide open lens. In lighting a scene in your home do not attempt to light up the room in every detail into the remotest corners. Concentrate the light chiefly on the subjects of importance. Too much detail is very distracting. In fact, if some of them are left to our imagination, we create in our mind that warm, homey atmosphere which is so desirable in our pictures.

One of the most interesting phases of indoor cinematography is undoubtedly the photographing of portraits, especially in semi-close-ups and close-ups. In order to make a successful portrait of a person, it is a good plan to spend some time in careful study of the characteristics of the subject itself. Upon that preliminary work the professional cinematographer bases the secret of getting fine and natural results on the screen. Once we have formed an idea as to what the subject should look like in the film, we treat it according to its individual requirements. Particular attention is paid to the face, hair, and eyes. The lights are adjusted to eye level except in the case of blue ones, when it is necessary to raise the lamps above the pupil of the eye to avoid reflexion. That helps to bring out the pupil which otherwise becomes so light and faded that it loses all expression.

In the case of deep sunk eyes the lights are lowered so as to avoid the harsh shadows under the eyebrows. In a like manner low lights are essential for a person with prominent cheekbones. That takes away the shadow which tends to bring them out. If the subject has a short nose, the camera is raised a little or the head of the person is tilted a trifle downward. Also too strong a lighting should be avoided here. This makes the nose appear longer. We reverse the process where the nose is too long in proportion to the other features of the face. Lower, but do

not tilt the camera, shooting slightly up at the person's nostrils, in case the nose needs to be somewhat fore-shortened. This procedure is merely an aid to photography and should not be exaggerated.

As a remedy for a double chin from a camera standpoint the subject should lift its head slightly, thus getting rid of most of the undesired chin. Then with the help of a little darker makeup, which makes the double chin look like a natural shadow, the defect is toned down. A low camera set-up and a strong illumination do the rest, eliminating all that is not desired.

This leads us to the subject of make-up with which every cameraman should be familiar. It is advisable to use make-up for the best results in cinematography. It does not require such a deep study and long practice as generally supposed. If a few directions are strictly followed, the art of putting on a make-up correctly is not so difficult and may be mastered in half an hour.

The principal object of make-up is to eliminate defects and blemishes of the skin and face and to enhance the features, so that when filmed they are in correct proportion. Photographically everything is produced in gray shades, ranging from black as the one extreme to white as the other. Make-up is used to help out the camera art and to assist nature to procure the correct tone qualities, be it lighter or darker as the case may be. Actresses always use make-up before the camera. It not only aids their beauty or character part, but simplifies the lighting problem for the cinematographer. During the shooting of a big production, which often requires weeks or even months, many occasions arise, where it would be impossible to photograph the star just the same all the way through, if it

(Continued on Page 37)



Jackson J. Rose



Photographed without make-up.



Photographed with make-up.



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Home Lighting

(Continued from Page 35)

were not for the make-up. With its help the identical photographic tone and quality is maintained throughout the picture, whether the actress be tired from the hard work and long hours on the set, or perhaps be a little more tanned from the sun and wind on the beach.

A careful comparison of the accompanying still pictures points out the improvements which may be obtained by using a little makeup. A deeper shade was applied over the eyes in order to emphasize the difference in color tone between the eye and the cheek. An eyebrow—or dermatograph-pencil was used to fill in the vacancies between the single hairs of the eyebrows. The eyelashes are accentuated with some mascara and the outline of the nose has been strengthened. The skin-tone value of the face, which loses its depth in the original, shows a great improvement, and the proper color tone of the make-up brings out the modeling and separation of the chin and the neck, which blend more or less together in the original.

In most instances make-up tends to destroy the natural character lines so pronounced in the wrinkled faces of older people and many times also to be found with young children. Therefore, in such cases the results will be better photographically, if the camera shoots them as they naturally appear. The eyebrows and lips on children frequently are so light that we have to resort to eyebrow pencil or liprouge in order to get a better definition.

Make-up should be applied very smoothly and with great care to the face as the camera detects and magnifies every little detail. It has been compared to the art of retouching photographs, and constitutes the only medium with which we can correct in a practical though limited way some of the defects in a motion picture film. This has to be done before the shooting, as it is a physical impossibility to retouch the finished motion picture negative or print with its thousands of small individual images.

No rouge is dabbed on the cheeks, because red has the tendency to photograph dark. The most widely used make-up in the American motion picture industry is that put up by Max Factor in Hollywood. This firm is in constant touch with the photographic progress in the motion picture art and keeps its products up to date in accordance with the requirements of the industry. Their make-up is numbered 21 to 29 for the use with super-sensitive panchromatic film, and this is equally well adapted to the older orthochromatic stock.

In your individual close-ups do not place light objects too near or behind the person. They distract the attention from the subject proper. An even background of a neutral dark color is most desirable. The use of a strong backlight to outline the figure or head will enhance the artistic appearance of the portrait. Further improvements can be obtained by replacing the regular lens with a long focus lens, which narrows the picture angle. If the subject is far enough away from the wall and kept in sharp focus at all times, such a lens will help quite a bit to diffuse the background and make it less conspicuous and distracting. It is understood that the lens then has to be used at its widest possible aperture.

Contrasting colors, such as black and white, should be avoided in the person's dress. Darker colors of medium value are easier handled than the very light ones. There is little difference in the effect arc-lights or incandescents have on the various color shades. Some of the lights have a little more reflecting power. However, not every color reproduces the same tone quality through the medium of the camera as we see it with our eyes. This is particularly true in regard to the yellow and the red parts of the spectrum, to which we are far more sensitive than the film.

The art in lighting, as we have seen, consists of accentuating the natural light sources, but should not be an attempt to light up the living quarters in the home like the throne-room

in a palace. A bit of general illumination is a necessity, if we want to avoid too great a harshness in the tone gradations of our picture. Let the light come from the windows if there are some in your scene, or from the lamps that are included in your picture. When the door leading to the outside or into a supposedly brilliantly lit room or hallway opens, the light should stream in from there as coming from the natural source. The principal subject or action on which the attention of the spectator is to be focused should also receive the greatest amount of light. This method conforms with the one used by the professional cinematographer in lighting his picture sets.

If you have daylight coming into the room, make all the use of it you can, and assist nature by filling in with your artificial lights wherever required to relieve the strong contrasts. Cameramen have done the same thing all along. The old theory that artificial lights and daylight won't mix, has been disproved by years of actual studio experience. The natural light is hard light which produces strong contrasts and tends to give a sharp outline in black and white. Artificial light is much softer due to the fact that it radiates from many different and less concentrated sources. The arclight comes nearest to the daylight in regard to photographic quality and value.

Orthochromatic film being more sensitive to daylight and arclights can be used to advantage in some cases, while panchromatic film, especially the supersensitive, is much more adapted to the incandescent lighting. In reality the super-sensitive panchromatic film was originally developed for just that very purpose and is now used exclusively in studio work. As far as the orthochromatic film is concerned, do not expect too much from it with incandescent lamps. These emit a decided yellow light to which only the panchromatic emulsion is highly sensitive. The ultraviolet and blue rays of the spectrum take up over eighty percent of the sensitiveness of the ortho film. The other fifteen or twenty percent is divided over all the other colors. This is the reason for so many disappointments, when orthochromatic film is used with the modern incandescent lighting equipment. If you have not yet tried the new supersensitive panchromatic film there are still many pleasant surprises in store for you in regard to its greater speed and excellent quality.



A Message To The Picture Industry

(Continued from Page 17)

If we do so, we shall all reap our rewards—we shall be repaid many times over for our efforts and our temporary sacrifices.

The American Society of Cinematographers is proud to offer this plan to the industry which has given so much to its members, and has made its own existence possible. It invites the whole-hearted cooperation of the rest of the industry, for the sake of the industry as a whole, and for the sake of every individual in the industry. We firmly believe that only as the body is sound can any member thereof be healthy. Therefore, it behooves every one of us to look first to the security of the whole, knowing that his individual interests will in consequence be made secure.

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Lens Problems and Properties

(Continued from Page 33)

ings, light poles, or tall trees are too close to the margin. The effect is due to the tapering of the glass from the middle towards the outside of the lens. The straight lines in the original have a tendency to curve inward if a diaphragm stop is used behind the lens, and outward if it is in front.

Already in the earlier days of photography all these defects could be overcome with more or less success. But, not until new kinds of glass for lens making were introduced could the fault of astigmatism be removed. Astigmatism is well known to many of us who have to wear glasses. It constitutes the inability of the lens of our eyes to bring sharply into focus horizontal and vertical lines at the same time. The result is that we see parts of the picture sharp and others blurred. The identical thing happens when lenses which are not corrected for astigmatism, i. e. which are not anastigmats, are used for photographic purposes. The first suitable glass for correcting this fault was produced at the well-known glassworks of Carl Zeiss in Jena. Since then glass of that particular and many other different properties for all kinds of optical purposes is manufactured in the United States as well.

As a result of this discovery lenses with greater aperture were rapidly developed. New combinations of the old and new lenses were found to take care of the correction of almost any objectionable error. The number of glasses combined in good lenses varies from one to eight or ten. Some of them are cemented together into units, or they form loose combinations, as the manufacturer sees fit. Their properties and light strength correspond to their intended purposes, too numerous to mention here in detail. However, once you know what you demand from your lens, it will not be difficult to find a suitable one among the many hundred makes which are manufactured.

The most convenient lens for the average work with a 16 mm. camera is a 25 mm. or one inch lens. It covers approximately an angle of thirty degrees, and corresponds to the two inch lens used for studio work on standard film. For close-ups and portraits a longer focus lens is to be preferred, because it gives less distortion for the same size of image. Telephoto lenses for shots of distant objects, wide-angle lenses, which come in handy where there is not space enough to take the camera back sufficiently to cover the whole width of the room or height of the building, a portrait lens, which allows the shooting of a large head with a minimum of distortion, a soft focus lens which gives a pleasing roundness to the picture, are some of the accessories that are no longer the sole property of the professional cinematographer, but constitute part of an up to date 16 mm. outfit.

Such an assortment of lenses is quite an expensive proposition for the average 16 mm. enthusiast. But a good set of supplementary lenses or attachments, which are used in conjunction with the regular one inch lens, can be had at much lower cost. They come separately or in sets and consist of single converging or diverging glasses which may be fastened to the front of the lens by means of a special holder, springs, or clips. In most cases they are not fully corrected, and some allowance should be made for that.

In the same line with these lens attachments come the diffusing disks, fog filters, and other ray filters for cutting distant haze, producing night-effects in the daytime, and correcting various colors according to the results you may be striving for. These are put in front of the lens in a similar manner as the supplementary lenses; perhaps you can use the same arrangement in both cases.

Quite often you will be able to find out from the manufacturer's circular or instruction book what the properties of the lens in your camera are, and what photographic possibilities you may realize with it. Otherwise you can test the lens yourself for its good and bad qualities and mechanical defects. The latter results always in poor definition. If you are troubled

with that the lens may be badly centered. Poor workmanship or an accident or fall of the camera may be the cause of it.

In cleaning your lenses you cannot be too careful. They are apt to be scratched very easily, as the high percentage of lead it contains makes the glass soft. You should also take great care to put the different elements back in the same position they were in originally. A little speck of dirt keeps them too far apart, or they may be screwed down too tight, which puts quite a strain on the glass. This not only blurs the image, but may cause the glass to crack or chip. A damaged lens is much more subject to flare and is liable to put a circular pattern on the negative. Bubbles may be found in all good lenses. They cannot be avoided even in the best glass, and have no bearing on the quality of the lens.

Lenses, particularly those with multiple cemented units, should never be taken apart. The balsam which is used to connect the elements of these units is very susceptible to moisture. This would loosen the cement and separate the glasses, thus requiring the lens to be sent to the manufacturer.

The checking of the focus of your lens can be done with a good magnifier on the latest negative you have taken. This will show you exactly at what distance from the camera you had focussed. A comparison with the lens scale will answer the question if the markings are correct or if you have a back- or front-focus. The correction can be made correspondingly by changing the mark on the mount.



Filmo Contest

LEADING Bell & Howell dealers are cooperating in a nationwide camera name and slogan contest in connection with the Filmo 75 camera, \$10,000 in Filmo equipment being offered for prizes.

Each cooperating dealer first of all stages a local prize contest. He puts on a window display featuring twelve Field Model Filmo 75 cameras in as many different finishes. The person who submits the best name for any one of nine designated finishes together with the best slogan to accompany it receives direct from the dealer as a local prize his choice of the twelve displayed cameras. The local contests generally continue for a week or ten days, and the opening and closing dates are fixed by the dealers conducting them.

The names and slogans submitted by the winners of the various local contests are transmitted to the Bell & Howell Company to compete in a national grand prize contest for a Filmo Model J Projector. This contest closes Jan. 31, and the final prize award will be announced Feb. 10.

In New York City within an hour after Willoughbys opened their local contest, over 500 persons had visited the store to see the display of cameras in the various colored finishes and had entered the contest. Similar interest is reported by dealers the country over.

Anyone can participate in the contest except officers and employees of the Bell & Howell Company or its dealers and their employees. No purchases of any sort are required as a condition for entering. Readers interested in competing should consult their local Bell & Howell dealer.



Artificial Sound

A METHOD of producing "sound out of nothing" by drawing and photographing a sound track is said to have been perfected, after many years' experiments, by Rudolph Pfenniger, of Emelka. The sound track along the side of the film is artificially drawn and then photographed, the results being similar to those of the sound recording apparatus. This method will be employed in the Emelka sound short "Die Tonende Handschrift" ("The Sounding Handwriting").

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. ¶ A total of **\$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry :: :: :: :: :: ::

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of \$500.00 for what its judges consider the best 16 millimeter picture submitted in this contest. \$250.00 will be given as second prize; \$150.00 as third prize; and \$100.00 as fourth prize, a total of \$1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after

the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9 millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg., Hollywood, Calif.

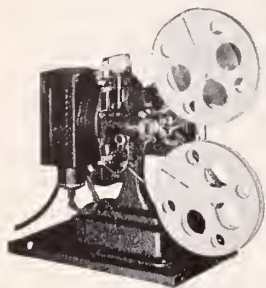
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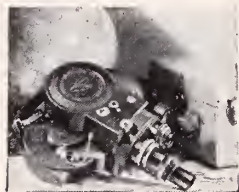
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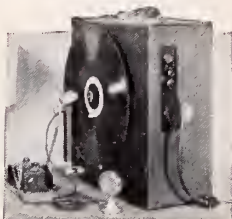
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Praise

ARTHUR REEVES, head of the Hollywood Motion Picture Equipment Company, and originator of the Audio-Camex portable recorder, is wearing a broad smile these days. The reason is found in "Filmland," a paper published in India. An editorial in said paper declared that the only good sound recording that has been done in India was done with an Audio-Camex set on the picture, "Devi Devyani."

Year's Best Films

OF UNUSUAL interest to those engaged in the making of motion picture is the following list of pictures selected by the Exceptional Photoplays Committee of the National Board of Review as the most meritorious films released between December 1, 1930 and December 1, 1931. Here they are:

First Ten

"Cimarron", "City Streets", "Front Page", "Quick Millions", "Surrender", "City Lights", "Dishonored", "Guardman", "Rango", "Tabu".

Supplementary Ten

"Around the World in 80 Minutes", "The Champ", "Public Enemy", "Skippy", "Street Scene", "Bad Girl", "Little Caesar", "Sin of Madelon Claudet", "Smiling Lieutenant", "Trader Horn."

Foreign

"Die Dreigroschenoper" ("Beggars Opera"), "Das Lied vom Leben" ("Song of Life"), "Le Million" ("The Million"), "Sous les Toits de Paris" ("Under the Roofs of Paris"), "Vier von der Infanterie" ("Comrades of 1918").

Selections of the first ten by the Board are based on a consideration of what films have contained some unusual quality that is purely cinematic. The supplementary list is for films that, without any special artistic pre-eminence, are nevertheless successful and in some respect important pieces of motion picture making. The foreign films are selected as all-important and unusual contributions to the screen.

Agfa Extending Activities

WITH the start of the new year several changes took place in the Hollywood branch of the Agfa Raw Film Corporation that are of much interest to those in the motion picture business. E. M. St. Claire moved from the Los Angeles branch of the Agfa-Ansco Company to the head of the sales department of the Hollywood office, replacing King Charney.

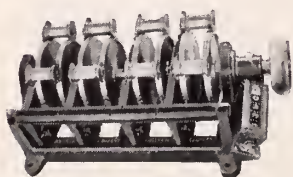
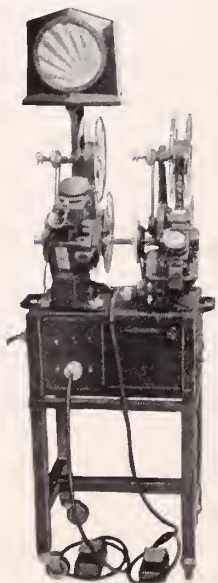
Another important step was the bringing of Dr. Ing. Herbert Meyer from the Agfa factory at Binghamton. Dr. Meyer, long an executive in both the factories in Germany and Binghamton, now heads the Technical Service Department here. This will be a new development in the local branch, and a fully equipped technical laboratory is being installed and efficient technical service and advice will be furnished the studios by Dr. Meyer. Other new developments will be announced later.

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The Art Center School

FOR THOSE interested in still photography, one of the most interesting places to visit in Los Angeles is the Art Center School at 2544 West Seventh Street. When this writer dropped in he found it difficult to tear himself away, for on the walls of the gallery was an exhibit of pictures done by our good friend, Will Connell. One cannot adequately describe an exhibit of pictures. We only advise you to go and see them yourself.

Incidentally, Mr. Connell is conducting evening classes in photography at this school, starting this month. Advanced and beginning groups are receiving instruction. The work covers both the elementary principles of photography and the highly technical methods of the professional. Mr. Connell told me that there will be very little of conversation and much of actual work, embracing lighting, form, composition and design, with very comprehensive demonstration and criticism. Any ambitious amateur would do well to look in, for Mr. Connell is a master at his art.



Plan Signal Corps Photographers Reunion For 1932

A MOVEMENT of interest to all motion picture and still photographers and laboratory men who served in the Signal Corps during the World War is now under way, according to word from Frank A. Krueger of Trenton, N. J. Mr. Krueger writes that a big reunion of the above mentioned men is being arranged to be held some time during 1932. For further information regarding this reunion you may write direct to Frank A. Krueger, P. O. Box 331, Trenton, N. J.



Victor's Revised Directory Valuable To All Amateur Movie Makers

ONE OF the most valuable booklets dealing with the 16 mm. field is the fourth revised edition of the Victor Directory of Film Sources, issued by the Victor Animatograph Corporation. This little booklet contains 64 pages of information of real value to any amateur.

In addition to listing all known sources of 16 mm. films (business firms, producing studios, distributors, etc.) the directory now contains much authentic information and data concerning numerous uses of 16 mm. films in the business, educational and religious fields. This directory will be mailed free to anyone who will send a request to the Victor Animatograph Corporation, Davenport, Iowa.



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Photo-Era Magazine

WOLFEBORO, NEW HAMPSHIRE, U. S. A.

Lens Testing (Continued from Page 13)

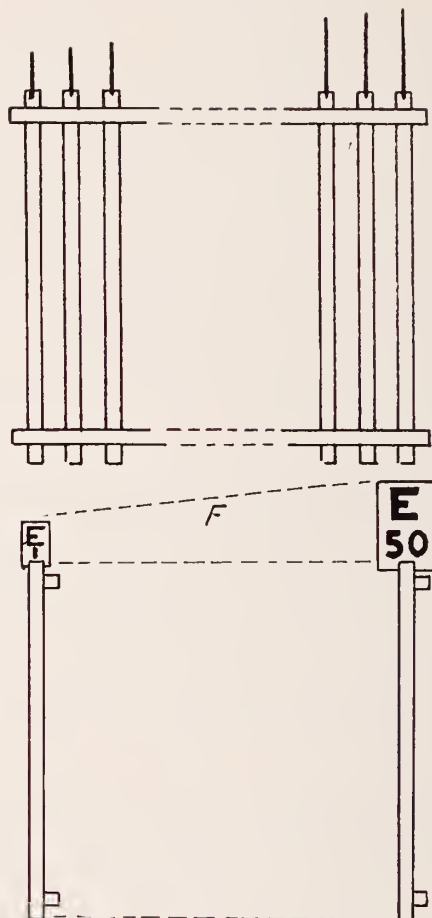


Fig. 12

EQUIPMENT NECESSARY

Motion picture camera and Fence, Figure 12.

Test No. 12 . . Object of Test . . Reflection and Lens Fog

METHOD OF PROCEDURE

Use camera on swivel mount of optical bench, adjust fulcrum for nodal point of Test lens attached to camera, focus star point of pinhole lamp placed in optical axis of test lens. Rotate camera and observe through finder appearance, location and brightness of secondary, tertiary, etc. star point images. Check photographic exposure and determine density of images by densitometric measurement. Develop parts of exposure strip by different laboratory methods up to appearance of chemical fog, and make overall densitometric tests for "lens fog" for other parts of test strips developed to just below chemical fog appearance.

Equipment Necessary

Optical bench, motion picture camera on swivel mount, pinhole lamp and densitometer.

Test No. 13 . . Object of Test . . General Definition

Read from result of Tests No. 1, 6, 9, 11.

Test No. 14. Object of Test . . Covering Power

Make densitometric test by photographing with test lens white screen about 15 feet distance with a black star on the screen center, plate or film at least three inches square for wide, half and quarter open lens. A screen and a light dis-

Pictorialists ATTENTION

Three cash prizes will be given for the three best photographs appearing in the pictorial section of this magazine during the twelve issues from October, 1931, to and including September, 1932

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tribution meter are needed in addition to previous named equipment.

Test No. 15 . . Object of Test . . Surface Conditions

Investigate by visual (magnifier) inspection whole lens, and if necessary, single elements under oblique light.

Test No. 16 . . Object of Test . . Other Physical Conditions

If lens action shows for any reason abnormal or unsatisfactory overall characteristics, especially regarding definition and focus, lens separation should be checked by lens micrometer; lens elements checked for true mounting, excessive bubbles, striae and discoloration also, optical axis checked as to obliquity by rotating lens between starpoint and the screen.

Total of Necessary Equipment for All Tests

Optical bench. Moore Filter, No. 1. Ground glass plate. Swivel mirror. Adjustable lens holder. Two square-ruled glass plates. Arc lamp and condenser magnifier. Two bulb lamp houses. Ground glass plate with circular matte and fine ground center. Set of standard arc lamps (carbons). Set of standard incandescent bulbs. Spectroscope. Half-silvered mirror. Prism system for beam displacement. Screen. Chromatic aberration test unit mount. Motion picture camera (head only). Swivel mount for motion picture camera. Special shuttle with etched mirror and prism. Pinpoint lamp. Resolving power chart. Fence and optical targets. Densitometer. Light distribution meter. Lens micrometer.

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SYNCRIFILM Model J sound head, a product of the Weber Machine Corp., has been developed and built especially for small theatres and designed for easy attachment on Simplex and Powers projectors.

Compact and of sturdy construction, these sound heads are simple in design, and the threading of film is very easy, it is said. The sound head is driven direct from motor to an accurately balanced combined pulley and flywheel by use of two round woven endless belts. Projector is driven from sound head drive shaft, using high grade silent chain.

This drive is said to be smooth, quiet and insures correct reproduction of music or voice without tremor, waver or other form of distortion, the company declares.

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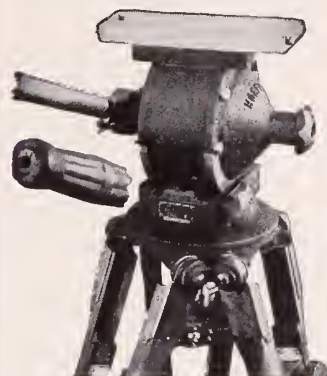
RCA For Reo

THE REO Motor Company has contracted for the installation of RCA Photophone sound reproducing equipment in the auditorium maintained by the automobile company at its plant in Lansing, Mich., according to an announcement by E. O. Heyl, vice-president and general sales manager of RCA Photophone, Inc.

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Television Not Ready

Television has not yet reached the point where the Federal Radio Commission will recognize commercial possibilities in visual broadcasting, it is stated in the Commission's report submitted to Congress recently.

Ingenious B. & H. Device

THE BELL & HOWELL Company has developed an ingenious micro-motion attachment for Filmo 70 motion picture cameras for use in time and motion study by industrial engineers, production managers, and all others interested in the efficient production of manufactured articles.

The use of motion pictures in analyzing factory operations in order to reduce waste motion is growing rapidly, and this new device will be welcomed as affording a remarkably practical means of securing maximum results in this field.

The new attachment permits of photographing the image of any standard stop watch together with the image of a data card on each frame of film exposed in making movies of a manufacturing process—or, of course, of other processes which are desired to be studied from a time and motion standpoint.

In manufacturing operations time records have been registered on the film itself by placing a time clock in the camera field near the worker, but often this has made him "clock conscious," and his motions have not been normal and natural. This new device overcomes this defect, inasmuch as the worker does not see the watch.

The device attaches to the base of the movie camera. To the rear of the camera is a lamp house with a 40 watt lamp. At the end of the lamp house farthest from the camera is one compartment to accommodate a stop watch and another for the data card upon which is written a brief description of the operation being filmed.

The images of the watch and data card pass through a series of lenses in a tube connected horizontally with the lamp house and located directly beneath the camera. This tube opens, also horizontally, into another but smaller tube on which is a dial calibrated in feet. This dial is set to the same footage as the focusing dial of the photographic lens. Near the end of the tube, on the inside, are a lens and prism by which the watch and card images are projected to a prism at the top and end of the tube, this latter prism projecting the images into the field of the photographic lens so that they are photographed on each frame of film at the bottom. The matching of the two focusing dials, mentioned above, insures the sharp registration of the watch and card images on the film.

As a preliminary condition of proper timing, the camera is calibrated at 1,000 frames per minute or multiples thereof.

Another Hollywood Rival

THROUGH the medium of the Associated Press comes word from Halifax, N. S., to the effect that England is soon to have a counterpart of Hollywood. The press report stated that Major C. Fairbanks-Smith, managing director of the newly formed Empire Films, Inc., was authority for the information. The Major was quoted as saying that he is in America to gather together skilled technicians who will take back to England their technical knowledge gained in America's film capitol. The new British film center will be located at Slough, according to the report.

16mm. Contestants Attention

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The Woman Film Director

(Continued from Page 10)

movies. The creation of popular entertainment, especially in this world of corporative economy and the industrialization of art, is not the Frenchman's forte. The French director, if he could preserve his own identity, would be the cinema's aesthetic stress, rather than the popular victualer. Germaine A. Dulac surely has her emphasis to lend.

She is, like many French directors, very clear and articulate in her conception of the motion picture. This critical comprehension is to her, at the present point in film-history, more important than the films themselves. The critiques, the studies, the polemics, she asseverates cast "a luminous ray into the obscure future and, with altruism, guide the cinema toward a precise destiny, revealing the cinema in its ideal strength, its perfect image." It will be seen that Mme. Dulac is eloquent in her love for the tenth Muse. As to herself, she belongs, she says, "ideally, if not in effect" to the school of pure movement, the **extra-visual**, as opposed to the "anecdotic school." Her aspiration is "the union of the two by means of their common factors: sincerity and the knowledge of the visual." The lack of artistic sincerity, which means to her finally the absence of devotion to the nature of the art, is the real cause of the failure of the anecdotic film to realize "the spectacle of a work." The only liberty the commercial producer allows the director is the freedom of choice of theme, a freedom which is no freedom, because the choice is among a limited number of specific scenarios or plays or novels. The success of the Russian film, Mme. Dulac finds, is its devotion to the image. The best of the films of all nations are, she maintains, devoted to the expression of national experiences through significant images. The Russian, for instance, subscribed to the Stalinist formula of an art "proletarian in content and national in form."

"The great fault of the cinema," says Mme. Dulac, "an art uniquely visual, is its failure to seek its emotion in the pure optic sense. Visually, by the movement of rhythms, the cinema composes its complex life. The cinema certainly can tell a story, but it must not forget that the story is nothing, a surface only."

I cannot say that I totally agree with Mme. Dulac. Let us not speak of a story but of an experience, a human experience. Its force, the social persuasion of the Russians, for instance, is the impetus of the film. Having been motivated, the film then seeks to convert this initial experience into the final aesthetic experience of the picture. It does so by the means Mme. Dulac urges. But since the cinema has a "complex life," too broad a characterization of it can be misleading.

Of such means Mme. Dulac is a delicious master. Take her best film: "The Sea Shell and the Clergyman". There is not in it a definitely apprehended story, but one does follow it as the succession of the image-experiences of an inhibited mind. They are most convincing as a mental state and very lovely as a rhythm. The ingenuity of the effects of imagery achieved is startling; though, as with all ingenuity, the method by which these effects are achieved is very simple. For instance, in one place, a body divides into two. It was effected so: the player must stand at severe rest. His head is propped by a brace to prevent the least movement. A thread is drawn midwise down the face. The camera is moved left-right with the thread as the limit of the scope of the lens. One-half of the negative has now recorded a movement while the other half has been masked to prevent any imprint. The movement is reversed to capture the second half of the figure upon the second half of the negative. The result on the screen is of a body moving away from its center in the opposite direction, a body splitting, although actually the body has never moved.

Germaine Dulac was one of the first of the artists to experiment with prisms, for distorted or multiple effects. She was one of the first to look for the kinetic effects of moving things.

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Amateur Movie Making

(Continued from Page 32)

ambitious story than you are technically ready to film. You will write too much, or perhaps too little. You will not be able to maintain the right balance, dramatically or cinematically, between your scenes and sequences. This will give you trouble in directing, and more trouble in cutting your picture. In consequence, you will not save film and effort, but waste it. For although a script is the foundation of a successful picture, it must first of all be a good script—one that is based on experience, and knowledge not only of story values, but of production methods and conditions. Therefore, since scripts embodying these qualifications are available, by all means use them until you have gained that experience for yourself. And—don't be afraid to tackle something absurdly simple at the start! Too many amateur productions have been shelved simply because they have been started with more ambition than ability.

The Importance of Imagination

In turning out any sort of a story for motion pictures—especially for the amateur production, where technical facilities are generally so limited—imagination is a prime requisite. To quote Miss Beranger again:

"Screen writing does not require rhetorical skill; it isn't literature, in that it isn't based on the written word. But it does require great invention and imagination, because we have to think up all kinds of ways of showing in action what other people can say in words.

"The second requirement of the screen writer is the power of visualization. This is the one latent trait that you need—you must have the ability to . . . close your eyes and imagine just how a thing is going to look on the screen. Not only that, but you must be able to estimate just how valuable each bit of action will be to the completed picture.

"The third requirement of a screen writer is a knowledge of the technique of the screen. Nothing can teach you the actual craft of pictures but making them.

"The fourth requirement is a sense of dramatic values" (This is as important in preparing a travelogue as in preparing a dramatic film.—W. S.) "You have to know the basis of drama. Conflict and suspense make drama. A story is interesting in proportion to the suspense you can give it. The Freytag Arch, which divides the action into exposition, complication, and denouement, is a good fundamental structure on which to base what you develop. The audience is interested in a plot as it unfolds, and the characters as they develop; you must be able to handle both.

"Another point is that of settings. Settings should never detract from the plot. The audience should be able to assimilate beauty of setting at the same time it is getting plot. The minute they are too conscious of setting it bothers them—it gets in the way of emotions and action."

Most of Miss Beranger's remarks are quite as applicable to the preparation of amateur scenarios as they are to professional ones. True, the amateur is restricted in many ways, having far less in the way of technical, artistic and financial resources than the professional producer, but he can still produce an interesting and well-constructed picture. He can have a well constructed plot, and well developed characters: the rest is dependent upon his ability as a director and cinematographer, and the ability of his actors.

There are some technical details which neither amateur nor professional can overlook. First of all, he must be careful that no detail—no character, motive, action, nor 'prop'—should suddenly appear out of nowhere. Every important detail of this nature should be carefully 'planted' in the mind of the audience during the expository stage of the plot. It need not be done ostentatiously, but it must be done so that when it is used later on it does not come as something unexpected and ridiculous.

Most of all, the writer must be able to devise visual methods of conveying ideas. There are, of course, times when a title must be used: but the best motion picture (silent or sound) will always be the one in which the story is told as nearly as possible completely in pictures. Therefore, don't hesitate to take advantage of every pictorial story-telling device that you can imagine, or that you have seen in professional pictures. The fade-out and fade-in, for instance, will often cover lapses of time or changes of location. Then there are innumerable purely visual devices that can convey ideas that, at first thought, you would think demanded a title. If you have a lapse of time between evening and morning to bridge, it is much more effective to use, instead of the time-worn "Came the Dawn" type of title, a simple fade-out on the evening scene and a fade-in of a doorstep with milk-bottles and the morning paper. If you want to bridge the distance between New York and Paris, it is equally simple to make a lap—dissolve from the Chrysler Building to the Eiffel tower. incidentally, these can both be done with stills and a title-board, while your action itself is made in Los Angeles or Kalamazoo.



Wandering With Vanderbilt

(Continued from Page 24)

is covered with a growth of various kinds and sizes of Eucalyptus with just a few trees of other kinds scattered amongst them. The gum trees are the native wild tree of this part of Australia. If you want an idea of what the back country or "bush" as they call it here is like drive over to Elysian part of the hills that are covered with Eucalyptus trees and are not landscaped.

A Fox movietone truck came to the dock and some Graflex men from the newspapers to get shots of the Commodore. When Mr. Vanderbilt came on deck he made a very short but nice talk for the Fox news and the newspaper men got their shots.

The two men on the Fox News outfit are very fine fellows. Their home is in Sydney, just happened to be up here doing some stories.

I decided not to go to Sydney as the time is too short. Sydney is a modern American type city of a population of 1,500,000, has the finest harbor in the world and is just completing the largest steel bridge in the world across a section of the harbor.

The "Alva" couldn't go in drydock here, draws 3 feet too much water. Probably will go in drydock at Singapore now. She is being painted to the water line and masts and everything on deck also is receiving a coat of paint.

There are several good picture theatres here so we are seeing some talkies first time since leaving the States.

Sunday, went sightseeing around Brisbane and the suburbs about three P. M., ended up on top of a 5,000 foot mountain which is sort of a park and a fine place to get a view of the City and all the surrounding country. We could follow the course of the river like a long twisting silver snake far into the back country. There is a refreshment parlor there and we had tea and scones just before sundown, then returned to town by another route.

Saturday afternoon, Mr. Winterbottom, the proprietor of the hotel, and I went to the horse races. We were in time for five of the ten races. The horses and track here is a great contrast to the one at New Caledonia; really good grandstand, well kept track and beautiful horses. Every person here seems to be an ardent race fan, old, young, from the richest to the poorest.

And now, on we go. I hope to give you some more of my chatter later.

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Doug. Fairbanks.
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Smith, Jack.
Snyder, Edward J.—Metro-
politan.
Stengler, Mack—Columbia.
Struss, Karl—United Artists.
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Tolhurst, Louis H.—M-G-M.

Van Buren, Ned—Eastman
Kodak Co., Hollywood.
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Varges, Ariel—Fox Hearst
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Wagner, Sidney C.—Fox.
Walker, Joseph—Columbia.
Walker, Vernon L.—R-K-O.
Warrenton, Gilbert—Universal.
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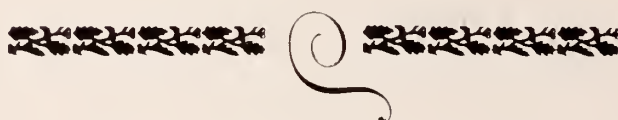
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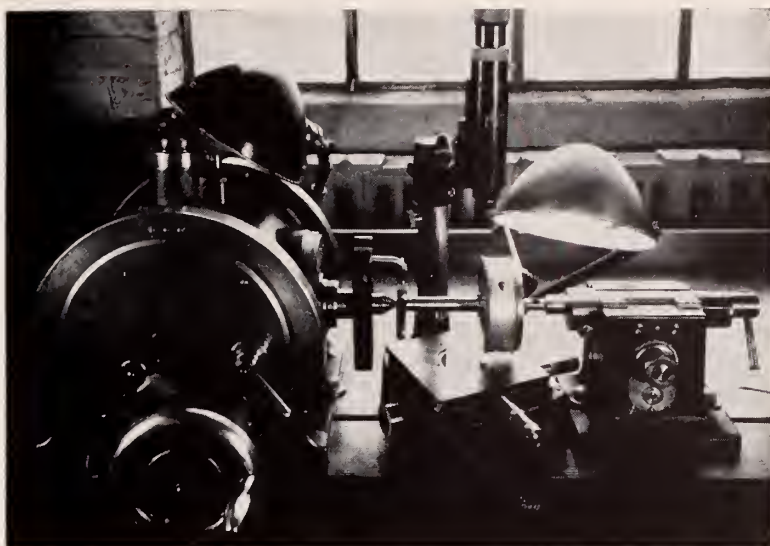
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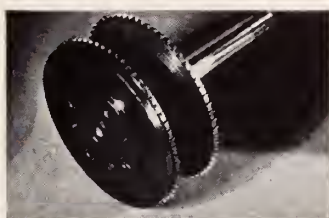


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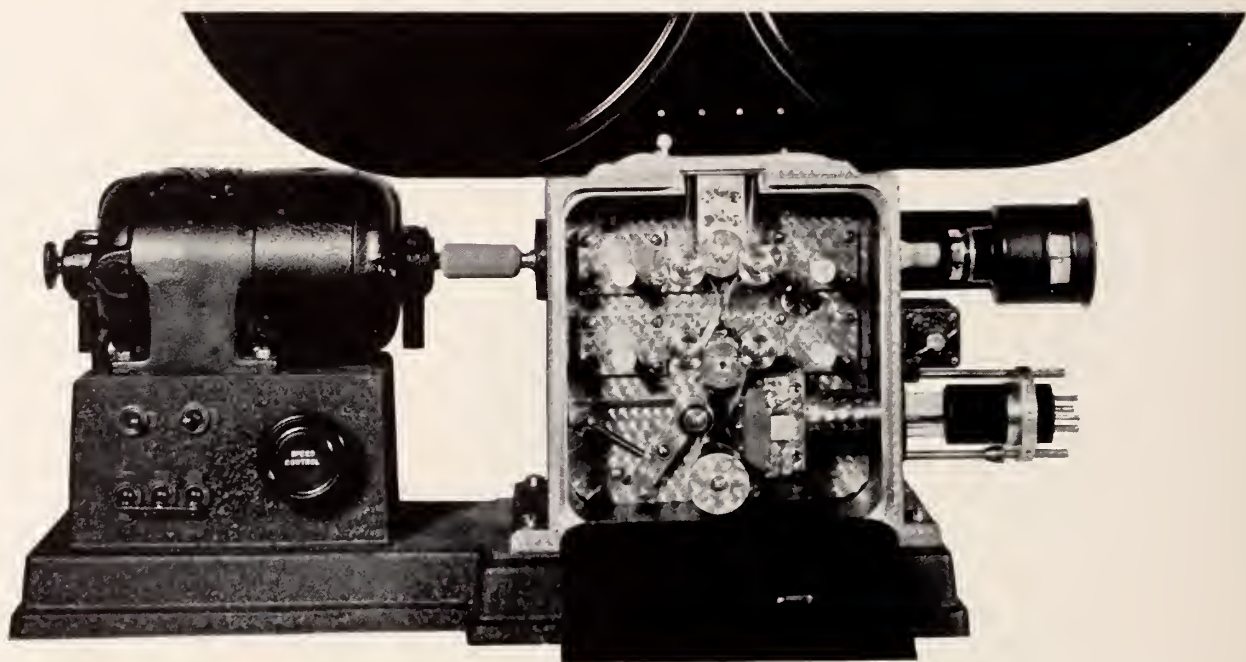
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Volume XII

FEBRUARY, 1932

Number 10

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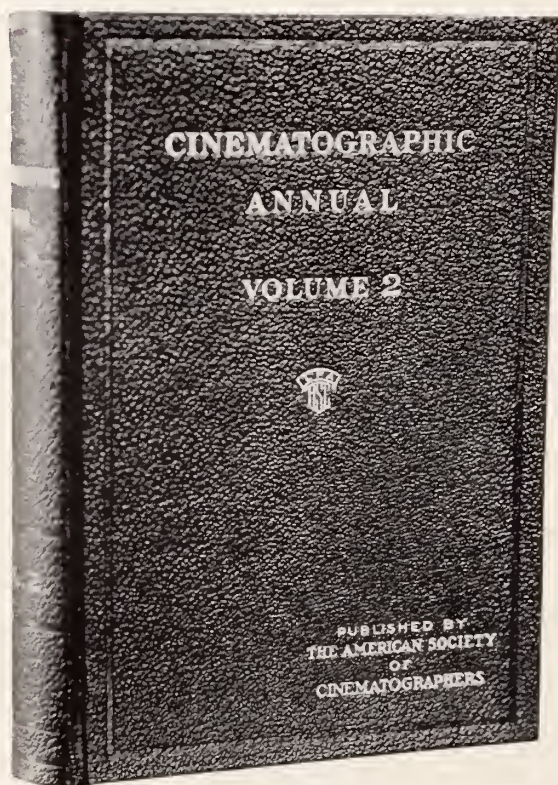
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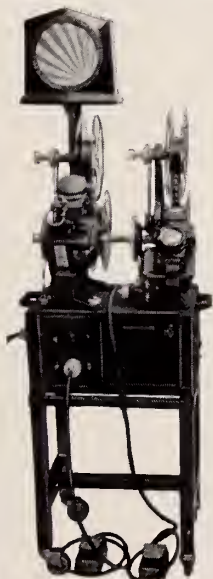
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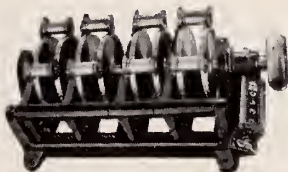
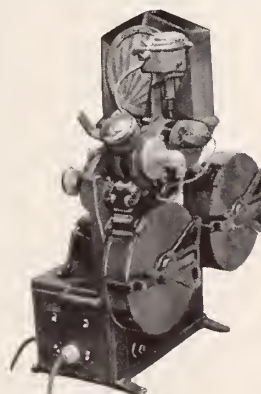
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Common Sense and Camera Angles

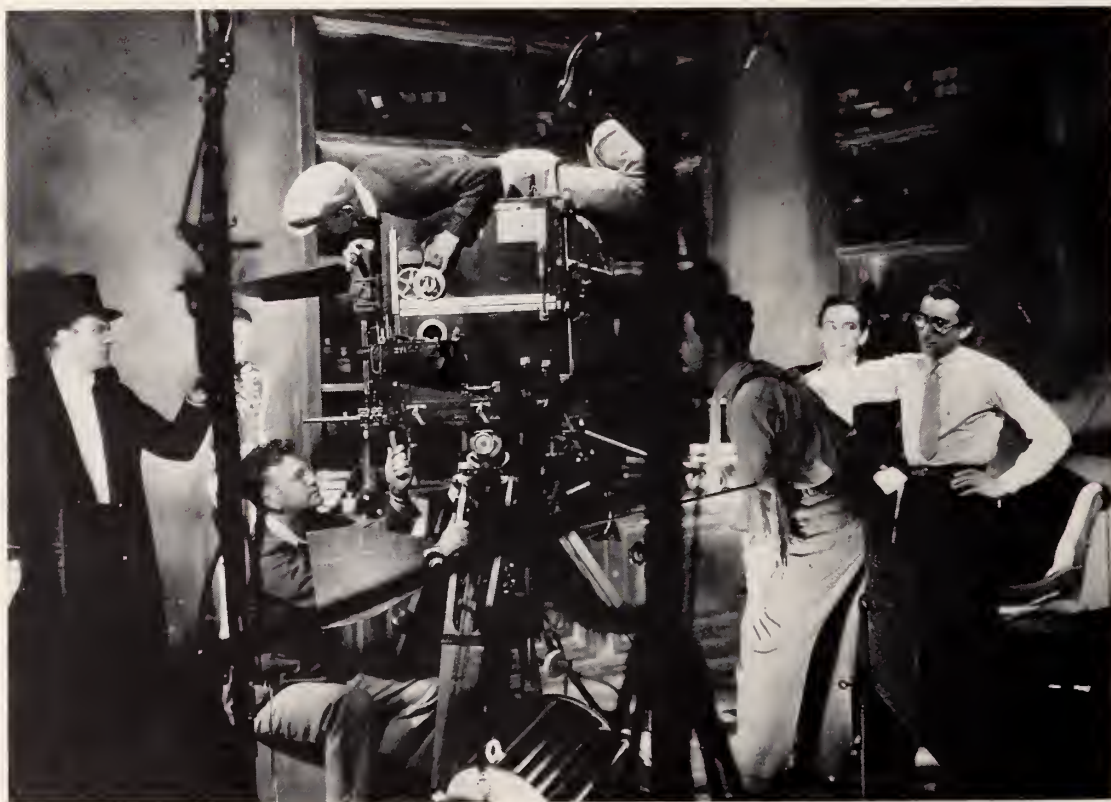
by **ROUBEN MAMOULIAN**
As Told to William Stull, A.S.C.

THE MOST important tool at the motion picture director's command is the camera. Understandingly used, it can be the true star of every production; unwisely used, it can be the "heavy," as well. Which part it is to play depends entirely upon the camera-wisdom of the director and cinematographer, and upon the degree of mutual understanding that obtains between them. Each must know the other's plans and dramatic conceptions, and the two must be able to work in complete harmony, with such unity of thought and purpose that they are almost like one man. I do not mean by this that either should ruthlessly dominate the other, but that each should so completely understand the other's artistic and dramatic ideas and methods that instead of being two individuals working to attain the same ends by different methods, they should coordinate their activities and work together like parts of a perfect machine.

The first step toward this is, of course, agreement, based on mutual understanding, as to what is to be the keynote of the picture, the sequence and the individual scene. Is the basic dramatic conception idealistic or realistic? Is the story to be told through delicate touches or bold, virile contrasts? Is the telling to stress the story itself or the manner of its recital? These, and a thousand other questions arising from them, should be completely settled in the minds of director and cinematographer before the actual shooting commences, so that, from the first rehearsal, the two can work as one, completely coordinating their efforts, and making the picture a complete, coherent unity from start to finish.

For this reason, I advocate giving the cinematographer more ample time for preparation than he is at present given before starting production, in order that he and the director may reach this state of mutual understanding beforehand, rather than after several days of work, during which, since neither completely understands the other's intentions, much time and effort must be wasted upon imperfect results. In order to attain this perfect understanding, each must be able to see beyond the immediate confines of his work: the cinematographer must in fact be a good director as well as a good photographer, and the director must likewise be a good cinematographer. Not that either should by this knowledge feel qualified to supplant the other, but that each should be able to see in its true perspective the relation of his work to the whole.

Of the two, I believe that it is most important for the director to learn cinematography, for most cinematographers are men of many years' experience, and have worked with so many directors that they can hardly help knowing the basic principles of direction, while many directors, coming, like myself, from other fields—such as the legitimate stage—are inclined to overlook the vital bearing that cinematography has upon the dramatic values of a motion picture, and to feel that a knowledge of stagecraft is sufficient. But stagecraft alone is insufficient: to direct a motion picture without a knowledge of the dramatic uses of the camera is like attempting to write in a foreign language when knowing only the grammar, but not the colloquial idiom. The actual results of attempting to make



Karl Struss, A.S.C., and George Clemens making a free-head "pan" while Mr. Mamoulian, in shirt sleeves, looks on.

a motion picture without this knowledge will be one of two extremes: either conservative and "stagey," or an unrestrained orgy of unjustified angle-shots and camera-movements. Either is bad, but I regard the latter as worse, for in the first case, if story and dramatics are sound, they will probably gloss over the technical omissions; while in the latter case, the cinematics being definitely bad, such is the power of the camera that this technical fault will overshadow the good points of story and staging. Therefore, the director must know how to use his camera: when to use unusual angles—and why; when to move his camera—and why.

Originally, the camera was merely a machine that recorded the action played before it, much as the eye of a spectator in a theatre observes the action on the stage, without changing its position or making any attempt toward selectiveness. All the action was played in long-shots. It was D. W. Griffith, I believe, who first conceived the idea of visually guiding the audience's attention by means of the close-up, and, later, of making the audience participate in the physical movement of the scenes through the follow-shot. Years later, various German directors rediscovered this, and added to it the powerful auxiliary of angle-shots. Most recently, the Russian directors have added "montage," which is really nothing more nor less than the dramatic use of cutting, dressed up with a French name. Director and cinematographer must both be masters of all of these, knowing how and when to use each—and above all, the psychological reasons for each.

Important as it is to know when to use these technical tricks, it is even more important to know when not to use them, for the best scene ever conceived can be ruined by the intrusion of factors that have no real bearing upon its meaning. In some scenes the camera is all-important, in some, the acting, in some, the dialogue, and in some even, the set. In my work previous to entering pictures, as a director of stage-plays, I found this truth applied in a more or less elementary way. Therefore, I made it a practice to study each scene through preparation and rehearsals until I thought that I knew its real dramatic value. Then I would seat myself in the auditorium and study the scene as the actors played it: study it with my



Low camera setup here emphasizes bestiality of "Hyde."

eyes closed, to assure myself that the players were getting the maximum value from their lines; and again with my ears closed, to make certain that action, pantomime, and grouping were perfect. If all of these were satisfactory, the scene itself must be; if at any moment I could not get a clear understanding of the scene through either eyes or ears unaided, something must be wrong with the direction. I would stop the action, and study until I had found and remedied the fault.

I find that I can apply the same method, on a larger scale, to motion picture direction. After the players are well rehearsed, I study the action through the camera's viewfinder, or through the recorder's earphones, according to the requirements of the scene. Most frequently, I study it through the camera, for the visual must predominate in a motion picture. It is not only the action that is important, but the way in which the camera sees that action. The cinematographer must light the action to exactly match the mood in which it is played, and must have his camera at exactly the right position matching the dramatic perspective of the scene.

This is the salient point about camera-angles: they must be used to match the dramatic angle of the scene, never for their own sake. A simple close-up may be an attractive piece of photography, and vastly flattering to the star—but if it is cut into a sequence in which it has no dramatic place, it is essentially bad; bad direction, bad photography, and bad cinematics. Similarly, if a close-up is needed, and not used, it is equally bad. Either the director or the cinematographer—if not both of them—should know enough about his business to see that such a shot was necessary, and to see to it that one was made and used.

The same rules apply to the more intricate angle shots. If they aid the dramatic progress of the picture, they are good, and must be used; if they hinder it, they must not be used. For instance: Let us suppose that we have a scene of a group to photograph it from the angle that gives a visual perspective of people sitting at a table, discussing something. The natural



This camera angle makes foreground figure dominate the scene without sacrificing the background action.

(Continued on page 26)

The Shutter

by **DR. L. M. DIETERICH**

Consulting Engineer

THE SHUTTER performs in both camera and projecting machines, a necessary function in order to produce on the screen a "motion picture" based upon the "persistence of vision" of the human eye.

Persistence of Vision

This is nothing else but the fact that any light impression upon the retina of the human eye continues to excite the ocular nerve center or centers for a short period of time after its cessation.

If, therefore, momentary light impressions follow each other within such time increment of nerve lag—the eye "sees" light continuously.

Such time increment depends upon the intensity of the impressed light.

In viewing an average sunlit landscape this nerve lag continues in its effective gradual decline for a normal unfatigued eye and a "momentary" impression for about $1/12$ of a second.

The light sensitivity of a silver emulsion as used in motion picture photography is, however, even for at present commercially practical emulsion, very much lower than that of the human ocular system.

The "exposure" time for a motion picture film is therefore of necessity proportionally longer than a flick of the eye lid.

When motion picture cameras came first into existence, using the then comparatively slow films and also using the then again comparatively low screen illumination, the exposure and projection time increment developed by practical experience, to the value of $1/12$ of a second, equivalent to the above mentioned nerve lag.

The shutter then consisted of a revolving plate permitting light passage through the lens to the film for $1/12$ of a second and shutting off such light during a succeeding $1/12$ of a second.

Synchronous with such alternating light control the film movement, controlled by the intermittent mechanism stood still during shutter openings and progressed from frame to frame while the shutter was closed.

In its practical operation it impresses upon the film a number of "stills" in rapid succession, which, when projected upon the screen in similar rapid succession, are "seen" by the human eye as a continuous picture.

If we consider the optimum definition of sharpness of a picture, obtainable by standard lens and emulsion performance desirable for final pictorial screen effects, then the above described shutter control would be entirely satisfactory, as long, however, only, as we photograph a "still."

A motion picture, however, depicts upon the screen almost universally "motion," i. e. we photograph moving objects.

As we are even today with fastest lenses and emulsions compelled to use an exposure time many times longer than the flick of the eyelid, the photographed object moves while a single exposure is made, and the picture record loses some of the characteristics of a perfect "still." The blending of succeeding pictures would then theoretically produce a picture of unsatisfactory definition. This, however, is in fact not the case. The slight blurring of the significant contrast lines of the object, if it does not move extremely fast across the axis of the camera, on the contrary produces a soft effect which is more pleasing or natural than a wire sharp image. This is proven by the results achieved with an Akeley camera with

a normal shutter opening of 230° instead of the otherwise standard 170° .

From this consideration it might be deducted, that the reduction of shutter opening should not be practiced for purely pictorial effects but for exposure values only.

As far as exposure control by shutter manipulation is concerned the "dissolve" action of the shutter, which will be analyzed later on, teaches an interesting lesson.

It is very often of quite surprising visual result, that a picture during a dissolve or fade-out suddenly and more or less only momentary shows a remarkable depth effect, indicating that that specific sequence was overexposed for its best natural rendition before dissolve action took place.

Despite the cutting down of the normal exposure time to practically one half, necessitated by the demands of proper sound reproduction, centerbalanced more or less by faster lenses and emulsions, it seems to be prevalent in the art to overexpose present motion pictures.

Where this practice is not indulged by the expert cinematographer, he in most cases controls exposure by shutter opening reduction.

This practice, however, is not to be recommended because it increases the time limit between the individual pictures beyond that limit, where persistence of vision acts to its full efficiency and the screen effects become less continuous, producing an "unsteady" picture.

It seems to be more advisable and is by certain experts successfully practiced, to rather use filters (say of the neutral density and K series) to secure best exposure results than to promiscuously reduce the shutter opening.

Another objection to pronounced shutter opening reduction lies in the desirability of the proper correlation between pictorial and sound effects.

It must not be forgotten that sound records are produced upon a continuous moving medium, be it disc or film, whereas the synchronization of the picture records makes them coincide with only certain segregated points of the sound record.

When the shutter opening is too much reduced these points of time coincidence or synchronization become farther and farther apart until the harmony between the sound and sight sensations is destroyed.

The average spectator may not observe the details, where for example the tattoo of a drummer which he hears is not paralleled by the motion of the drumstick, but such a scene becomes rather unnatural and somewhat displeasing. It produces an unbalanced total sense reaction, mostly apparent as a flicker-effect.

Another mechanical provision in modern camera concentration enables the cinematographer to gradually shut down the shutter while taking a sequence and producing so-called fade-outs, dissolves and lap-dissolves.

This is an excellent detail tool for the artistic cameraman and director for the production of both artistic and dramatic effects.

Lately the practice has come into use to use chemical rather than mechanical dissolves. Chemical dissolves have been perfected which are quite satisfactory and are especially useful where single or compound fading effects have been determined upon after a scene has been taken.

(Continued on page 43)

Some Experiments in Motion Photography of the Vocal Cords

by G. O. RUSSELL* and C. TUTTLE**

VISUAL observation of the laryngeal cavity by means of special instruments supported by the evidence of x-ray pictures during phonation has been utilized in studies of the mechanism of speech production. In the present paper we describe a motion picture method of photography of the larynx. When this method is perfected, it promises to be most valuable both in the continuance of the studies and in the presentation of findings to an audience.

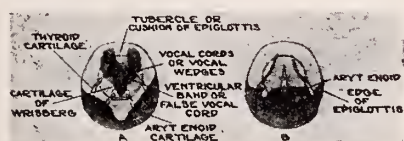


Fig. 1. Two views of cavity of larynx

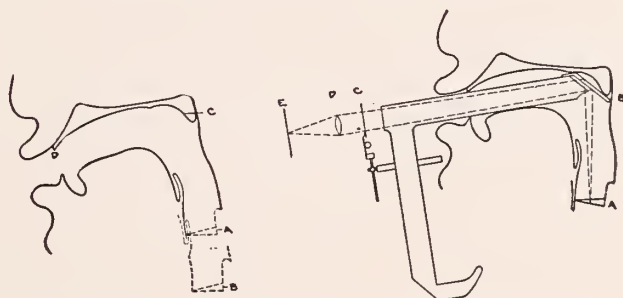
The vocal cords and the surrounding anatomical region which is of particular interest in the study of the speech mechanism occupy a circular area about 5.5 cm. in diameter in the mid-portion of the larynx. A and B of Figure 1 are drawings after laryngoperiscopic still photographs of the cavity of the larynx. The dotted circles inscribe the area to be photographed. A shows the full length of the cords (about 20 mm.). These are a pearly white in color while the surrounding areas vary from a cream pink to deeper shades of red. The false cords, which are a darker red than the true cords, lie approximately parallel to the latter. B shows the same area as it is covered with the epiglottis—a smooth, yellowish pink membranous material slightly concave forward and upward. Physiologically, the epiglottis was formerly thought to be a kind of trapdoor or lid which closed down tightly over the larynx during the act of swallowing. The present experiments show that in this subject the actual laryngeal closure is first created by an approximation between the pulvinar (or cushion) at its base, and the cartilages of Wrisberg in posterior-anterior direction; second, by the ventricular wedges (or false cords) laterally.

The position of the vocal cord assembly varies from a distance of about 60 mm. to perhaps 100 mm. down the throat during the act of speaking or singing. The two extreme positions are indicated in Figure 2, in which the vocal cavity is outlined from an x-ray photograph. A is the highest position of the cords and B the lowest. The distance of a point, C, at the back of the throat, from D at the front of the mouth is about 90 mm.

An optical system to image this inaccessible region upon the film in the motion picture camera presents some rather formidable difficulties. Nature has provided a nicely balanced set of reflexes to prevent the accidental introduction of hard material into the throat passages. The average subject will automatically protest an optical system thrust into the throat just as energetically as he will an inadvertently swallowed bone.

Experimental Technic

In these preliminary experiments, we have used the Russell "Fonofaryngoskop" made by the Electro-Surgical Instrument Co. of Rochester, New York. This device consists essentially of a tube 135 mm long and about 13 mm. inside diameter. At either end are mirrors which may be tilted with respect to the axis of the tube, thus enabling one to view his own larynx. The use of this device in our experiments is illustrated in Figure 3. Since the view is obtained through this small tube, there is no need of forcing the subject to open his mouth to the uttermost limit in order to pass in the light, forcibly depress the tongue, or pull it out so as to prevent the epiglottis from retracting and shutting off the view of the cords, as was formerly necessary in the usage of the old laryngoscopic mirror and illuminating device. Obviously no normal speech or voice could be produced under such circumstances.



Left, Fig. 2, Cross section showing extreme positions of the vocal cords. Right, Fig. 3, Cross section showing instruments in place for photography.

Optical Limitations Imposed by the Fonofaryngoskop.—Since the inside diameter of the tube is only 13 mm. and since the amount of illumination which can be supplied to the area to be photographed is limited, the use of a lens of short focal length and high relative aperture is required. If the diameter of the exit pupil of the lens is greater than 13 mm. it will be vignetted by the tube. For these reasons we have used a lens of 25 mm. focal length and $f/1.9$ aperture. With this lens as close as possible to the end of the tube, the object distance becomes 150 mm. and the image distance about 30 mm. The effective aperture is thus reduced to $f/2.3$. The magnification ($0.2\times$) is somewhat less than could be desired.

Illumination.—It is necessary to supply to the rather inaccessible laryngeal cavity an intensity great enough to photograph red tissue with a lens working at $f/2.3$ at a taking rate of at least 16 pictures per second. Previous experience¹ had indicated that under these conditions and using panchromatic film, a minimum of about 200 visual foot candles of illumination from tungsten at 2900 degrees K. would be required.

For visual observation, a small battery operated lamp (about $\frac{1}{2}$ watt) is provided with the Fonofaryngoskop. This lamp will furnish about 12 foot candles on the plane to be photographed—an intensity which is entirely inadequate for the photography. A quartz rod in contact with an external source appeared to be the best method of conducting sufficient light to the vocal cords.

(Continued on page 45)

*Phonetics Laboratories, Ohio State University, Columbus, Ohio.

**Eastman Kodak Research Laboratories.

A Radically New Studio Camera

Simplicity and Silence Feature New Tally Camera

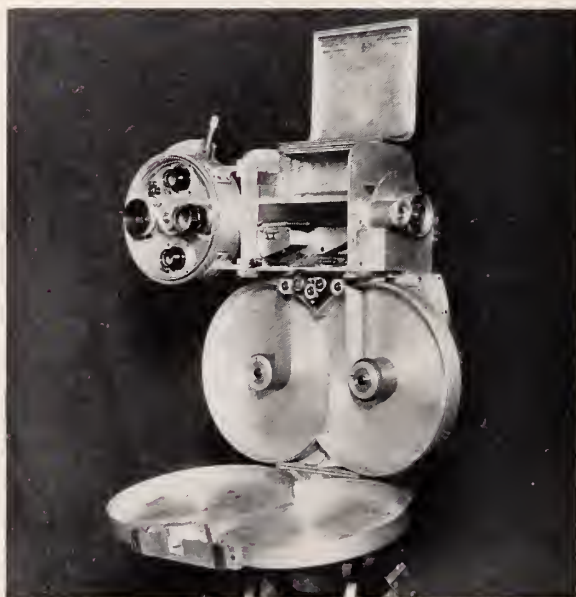
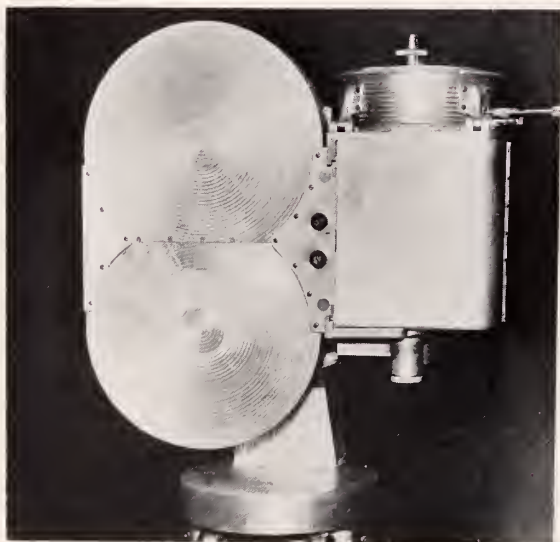
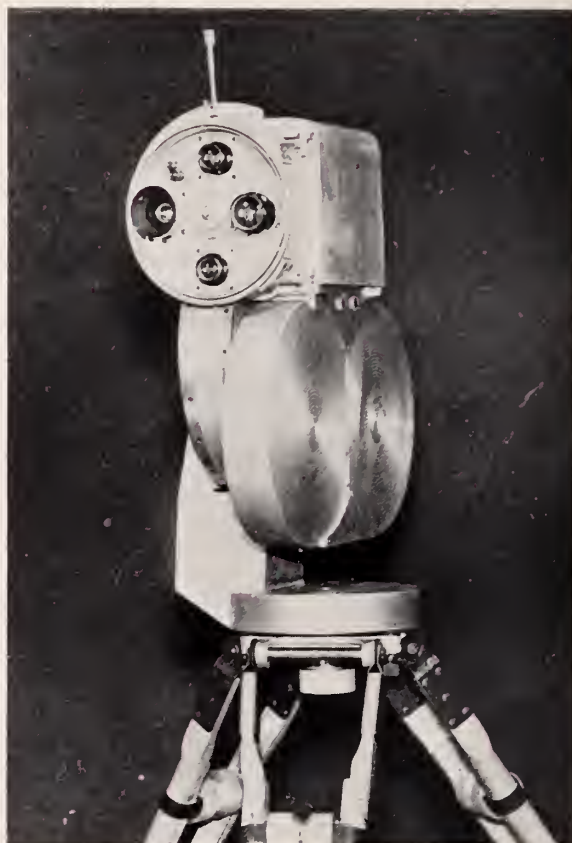
by **WILLIAM STULL, A.S.C.**

AN ENTIRELY new conception in studio cinema cameras has just been announced by two pioneers in the motion picture business, T. L. Tally, whose career as a showman extends back to the old Kinetoscope days, and Theo. M. de la Garde, whose experience as a motion picture engineer is almost as long. The camera itself, while embodying all of the mechanical essentials proven necessary through the years, is the most uniquely modern—almost futuristic—design that has yet appeared. In appearance, it is unlike anything now in use either in this country or abroad, while in operation it bids fair to realize the cinematographer's ideal of simplicity, accuracy and fool-proofness.

One is first impressed by the new camera's unique outward appearance. In it, the 1000 foot film magazines are placed beneath the camera proper, well below the center of gravity. The movement, lens-turret, etc., are grouped in a small and compact unit above the magazines, and the friction pan-and-tilt movement is built integrally with the camera-head itself, in a manner slightly reminiscent of the original Akeley. Due to its unusual design and low center of gravity, the new camera is perfectly balanced, and can be tilted or panned effortlessly and silently, the tilt action allows a vertical radius of more than 180 degrees, or from straight down to slightly more than straight up. The camera is so balanced that it will remain in any position. Friction locks are of course provided for both vertical and horizontal movements, as are means for adjusting the friction tension.

The camera case is sound-proofed throughout, and the camera and tripod insulated from each other by rubber, so that, since the movement is exceptionally silent, no blimps should be needed. The movement is of the cam-and-shuttle type, and is fitted with pilot pins. The shuttle is so designed that the fingers move straight into and out of the perforations

(Continued on page 31)



Three views of the radically new studio camera which is attracting the attention of Hollywood cameramen.



Mr. Clark at camera on location

Tom Mix Rides Again

With Dan Clark as
His Chief Cinematographer

by **HAL HALL**

PERHAPS the most joyful bit of news that can come to the ears of countless boys (both the young ones and the old ones) is the fact that Tom Mix has come back to the screen. And with his return, one of the most outstanding production combinations of Hollywood is resumed. This is the combination of Tom Mix as the star and Dan Clark as his chief cameraman.

Away back in the days of the silent pictures—days when Mix was the idol of millions and was one of the biggest money-makers on the Fox lot, Dan and Tom met. Various cameramen had photographed Mix's pictures up to then. But when Dan finished his first picture for Mix he became as much a factor in the Mix troupe as the star himself, for Dan liked Tom and Tom liked Dan—and Tom thought none could photograph his pictures as well as Dan. For eight consecutive years Clark photographed Mix's pictures; doing a total of 64 feature pictures, or an average of eight a year.

Then Mix and Fox parted company. Mix quit pictures to go with a circus, and the boys of the world lost their greatest Western star and idol. It may have been because, with the advent of sound, picture producers thought the end of West-

erns had come. Suddenly it was discovered that Westerns were more popular in sound than on the silent screen, and ever since "In Old Arizona" was filmed the various producing organizations have had their eyes on Tom Mix, wondering if he would ever come back—and who would get him. Universal was the lucky company to land Mix when he decided to come back—and one of the first requests that Mix made was for Dan Clark to come along with him and pick up the photographic Mix reins where he had left off when Mix quit pictures. About ready to start production on the first picture, Mix was stricken with appendicitis, and for a time it seemed as though he would not recover. But he is well again and now he is again riding his famous horse, and the old Clark-Mix combination is again functioning—and Dan and Tom are both wearing big smiles as scene after scene in "Destry Rides Again" are being packed in the Clark camera.

"It is wonderful to be with Mix again," says Clark. "He is one of the finest men to work with that I ever met. And, to me, an added pleasure in working on Mix pictures is the fact that it takes you out into the wild places where you have

(Continued on page 47)



A location scene on a Mix picture in the silent days. Mr. Mix and Mr. Clark are in center, facing each other

An Apertureless Optical System

by R. C. BURT

THE ORDINARY optical system for the reproduction of sound from records on film requires some form of limiting mechanical aperture of special shape. It is shown in this paper that not only is the use of such a mechanical aperture not necessary, but the apertureless system herein described has desirable features not obtainable with any other system. In this optical system the image of a finite source of light is optically flattened and elongated until it is in the proper proportion for the light beam on the film. This image is then focused on the film by an achromatic lens.

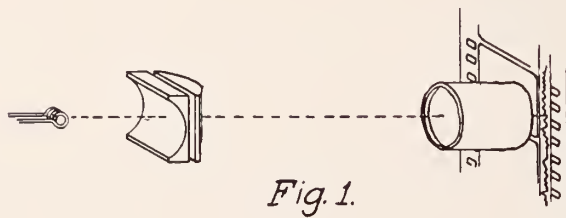


Fig. 1.

As shown in Fig. 1, this result is obtained by using special lenses. In an elementary system two of these lenses have cylindrical surfaces. One surface is negative, its axis being horizontal; the other surface is positive, its axis being vertical. The negative surface reduces the thickness of the filament image, and the positive surface draws out its length.

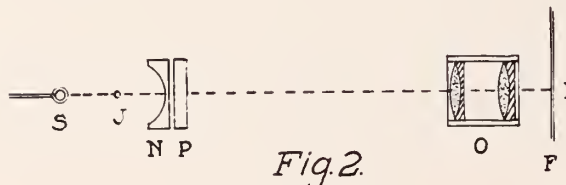


Fig. 2.

Fig. 2 is a vertical section in which

- S is the source
- J is the virtual image of the source
- N is the negative surface
- P is the positive surface
- O is the objective
- F is the film
- I is the image on the film

It is evident that by properly selecting the power of the negative lens, the virtual image J can be made any desired size so that with a given objective lens it will be reduced to the desired width at I.

Fig. 3 shows the plan section. Each element of the filament is drawn out by the positive lens P until, when observed from the objective, it appears as a long bar of light extending completely across the lens P. Light from each element is then brought to focus at a point on the objective. This appears as an image of the filament along one axis only, being a striated vertical band of light which completely fills the objective. It is obvious that instead of one lens of given power, several lenses of lower power can be substituted.

Selection of Lenses

In applying this optical system almost any available source of light may be used, and by properly selecting N and P any desired size of beam may be formed. The length and width of the light beam required on the film, and the light source which it is desired to use are usually fixed. Given the length of the light beam, the fastest short focus objective commercially available is selected. Usually a microscope objective is satisfactory, as these are inexpensive, highly corrected, and have speeds up to $f/1.0$ or greater. Selection of such a lens automatically places limits on the location of the image J, as these lenses are corrected for a certain working distance and this in turn determines the size of J.



Fig. 3.

Selection of the power and location of the lens element P comes next because, knowing the length of the selected source, P is chosen so as to fill the objective O completely with light of intrinsic brilliancy, thus obtaining the highest efficiency.

The length of the negative lens N is now determined to give the required length of image I and it is only necessary to compute N for the proper reduction of diameter of S to meet the specified value needed for J.

The mathematical solution of the above conditions is very elementary, requiring only the simple lens equation. Solution by maxima and minima for the shortest possible optical system with a given set of lens O and N is difficult, a graphical solution being much easier.

The advantages of this system in comparison with others are easily understood and may be enumerated as follows

A glance at Fig. 3 shows one that the objective O is completely filled at all points by light of intrinsic brilliancy from all points on the image J. Hence the system is 100 per cent efficient, giving the maximum brilliancy possible in the image I for any system using a source of light S and passing it through any lens. The only way a more brilliant image can be obtained is by using a faster lens at O or by increasing the temperature of the source S.

It is not sensitive to position of the filament. Referring to Fig. 2, S may move up or down, forward or backward, with only a small change in the position of J, due to the effect of the lens N. As a result of this feature a standard source such as an automobile headlight bulb is perfectly satisfactory. Once designed, all standard headlight bulbs are perfectly interchangeable without any refocusing whatever.

The effect of azimuth errors in the filament do not appear as an inclined light image, but only as a very slightly broadened image. When using an automobile headlight bulb, the filament coil may be rotated 30 degrees from the horizontal and the light image width is increased only 60 per cent.

The image is very sharp, clean, and true, being formed by an optical surface instead of a mechanical slit as is the usual custom.

(Continued on page 46)

Loyalty

by **JOHN ARNOLD**

President, American Society of Cinematographers

CRITICISM of the motion picture industry and its people has always been prevalent. Some of this criticism has been baseless—the mere puerile diatribes of disgruntled incompetents or the insincere rantings of unscrupulous publicity-seekers; but some of it now and again has been true. Of this latter, the most constant as well as the most serious charge has been that motion picture people, individually and collectively, are the most unswervingly disloyal group in the world. Without doubt, this is the gravest charge that could be brought against any industrial group—and it is doubly heinous when raised toward a group such as ours, whose very life is in appealing to the emotions and sentiments of the world. Yet, lamentably, it is a charge that every one of us must admit is justified. Loyalty is conspicuously lacking in every phase of the industry, whether it be loyalty to friends, loyalty to the industrial group, loyalty to the employer or the employee, or loyalty to the industry as a whole. In its place is self-seeking individualism, back-biting, scandal-mongering, and every imaginable sort of petty politics. With a few notable exceptions, everyone is willing to do anything for money or preferment—to lick the feet of the successful person (though ridiculing him behind his back), and to openly spurn him when his luck leaves him for a moment.

Why is this so? Our industry is one of the greatest in the world, and includes among its personnel thousands of the finest, best and most capable men and women to be found anywhere. Can it be that we are ashamed of showing that spirit of loyalty that must be inherent in such people? Is it possible that we are of such base stuff that we have none of the finer instincts of mankind in us? Or is our work so basically different from that of all our fellows that it stifles all the inherent decency in us?

It has been said that the making of motion pictures is unique—a merciless battle in which every man must fight for his own interest with tooth and claw, and in which so effete a sentiment as loyalty is a weakness. Perhaps it is—but every other industry or profession in this strenuous civilization of ours is just as much of a battle. Yet among them there is none the less a great measure of loyalty to friends, to co-workers, to employers, and to the profession as a whole. Can such a feeling exist in other pursuits, and yet be missing from ours?

It has been said that there is too much incompetence in high places—too much fraud and not enough honesty—to foster such a spirit of loyalty among picture people. Yet the same applies to every other industry in almost equal measure—without damaging the loyal spirit of the profession as a whole. Individual bankers may abscond—yet no member of the banking profession feels that the integrity of either his associates or himself is lessened thereby. Individual industrial executives in any line may prove incompetent—yet their fellow-workers do not feel that incompetence is rife in their industry because of it. Individual newspapermen may be debauched—yet no one—editor, reporter, or printer—will admit that because of it the entire industry must be ridden with vice. Individual lawyers, doctors, and even clergymen have proven dishonest—yet no professions have a greater degree of professional loyalty, or higher standards of honor. Can we admit that our industry is peopled exclusively by black-sheep?

In every other walk of life, people are proud of their craft. We who make motion pictures have even more reason than they to be proud of our vocation, of our industry, for our products reach the world, give pleasure to uncounted millions,

and influence the thoughts and lives of nations. Can we do this without a glow of pride in our work, without a conscious pride in being a part of so great an industry? A railroad man, asked what his vocation is, will proudly reply, "I'm an engineer, or conductor, or despatcher, (or whatever he may be) on the B. & O." A newspaper man will similarly reply, "I'm on the World." Why is it then, that a motion picture man—with even more cause for pride than either of these, will shamefacedly reply, "I'm on a camera at the.....Studio," as if apologizing for the fact?

Why not face the facts? Our industry is one of the two or three greatest in the world. Its influence on the lives and thoughts of the world is greater than pulpit and press combined. It numbers within its ranks thousands of the finest, most brilliant, and most capable men and women on earth. In magnitude, influence, and in its very nature, it is as inspiring a heritage as the world offers. Its personnel is at least on a par with that of any other group in existence. Lastly, it provides every one of us not only with a good living, but with one that is far better than we might hope for in any other line of work. From first to last, it is something to be proud of. It can, if we will let it, give us everything that we can desire: a worthy work, congenial fellow-workers, and abundant remuneration. For this we should be willing to give in return not only our best efforts—most of us do that much already—but our faith and loyalty. In common with every other industry throughout the world, ours is passing through a critical period. How soon and how completely it recovers depends upon us—individually and collectively. If we loyally and enthusiastically cooperate, working whole-heartedly for that recovery, nothing can stop it. If we remain as we are, every man for himself, doing his routine work, but nothing more, the hard times will inevitably continue, and the recovery be delayed and incomplete. Each of us, no matter what his position, must learn to think, not alone for himself or for his industrial unit, but for the whole industry. He must learn that his own future is bound up with that of every other member of the industry: he must learn to give his complete and unswerving loyalty, not alone to himself, but to his fellow-workers, be they cameramen, actors, directors, writers or executives, and to the industry as a whole as well. He must learn to give that loyal cooperation not alone to the other members of his individual craft, but to his employers, or his employees, and to every other individual and group in the Industry, as well as to the Industry itself.

Some of us may argue that it is no use to try to cooperate with any other group, saying, "What have the producers, or actors, or directors ever done for me—what have they ever given me but the short end of every deal?" Perhaps this is so; if it is, what have we done that would keep them from saying the same about us? When have we given them reason to think that we had it in us to be loyal to them as fellow-workers, or to the Industry as a whole? Have we, therefore, any right to complain, since their attitude must be a reflection of our own?

Loyalty and cooperation may be mere, intangible ideals, but it is upon such ideals that the greatest institutions of our day are founded. Let us then make the experiment: be loyal to each other, to all of our co-workers in other branches of the Industry, to our employers or our employees as the case may be, and, finally, to the great Industry of which we are all a part. No harm can come of it, and, if the experience of every other great institution in the world is any criterion, a great deal of benefit, individual and collective, must result.

A New Test Chart for Determining Color Sensitivity of Photographic Emulsions

by **DR. HERBERT MEYER**

Technical Division of Agfa Raw Film Corporation, Hollywood, California

THE amazing development in photographic technique during the last few years, which finally led to the present standard of quality, has replaced nearly all the "guessing" methods commonly used in former practice by methods scientifically based and enabling one to arrive at a quantitative measurement of data and factors necessary to maintain a uniform basis for any photographic procedure.

Sensitometry with its terms of gamma, speed, density and transmission is no longer a language strange to the laboratory men and looked upon as useless for practical application. However, this development has not arrived and never will arrive to a final status wherein every request is covered and cleared up, which could be called the ideal fulfillment of standardization. The technical and physical structure of the photographic process is far too complicated in its details and possible variations to allow a simple application of general standard methods.

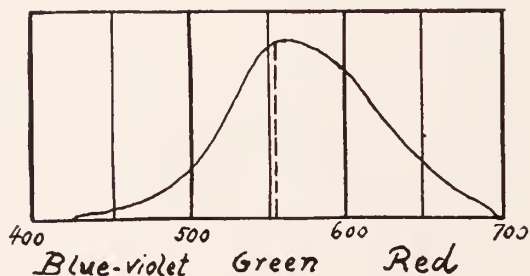


Fig. 1

Speaking of true photographic reproduction, we know, that the result is mainly dependent upon two important factors of the photographic material used; namely, gradation and color sensitivity. Gradation determines the rendition of shadows and lights, and furthermore the balance of both, which we may call the contrast. The gradation therefore will be found satisfactory, if, by using the proper method of development, the densities of shadows and lights and the contrast between all densities correspond directly to the brightness of tone values of all different shadows and lights and their contrast in the natural object to be reproduced. The determination of the gradation is well known and the methods for testing gradation not far from being standardized.

The second factor, color sensitivity, is far more difficult to determine, and at present there does not exist any method which is simple and efficient enough to be generally applied by the practice.

The ideal curve for true color rendition in photographic reproduction would have to fit exactly that of the sensitiveness of the eye to the color spectrum. This means, that in a reproduction of colors by black and white, the densities representing the different color tones must coincide with the brightness of the corresponding color tones in the object as seen by the eye.

Figure 1 represents an approximate curve of the color sensitiveness of the eye showing mainly that the maximum of sensitiveness lies within the green-yellow, while at the blue and

red end of the spectrum the sensitiveness declines to a minimum.

Comparing the curves of color sensitiveness of any photographic emulsion, we know that no emulsion exists which closely approximates the above conditions. For this reason, the use of color filters as well as the use of make-ups has been introduced, which allow to make the necessary corrections to the extent that in spite of the difference between the color sensitiveness of the eye and that of, for instance, panchromatic emulsions, the photographic rendition of color values appears satisfactory and natural.

The selection of the proper filters for a given object under certain light conditions is done by the camera men by use of

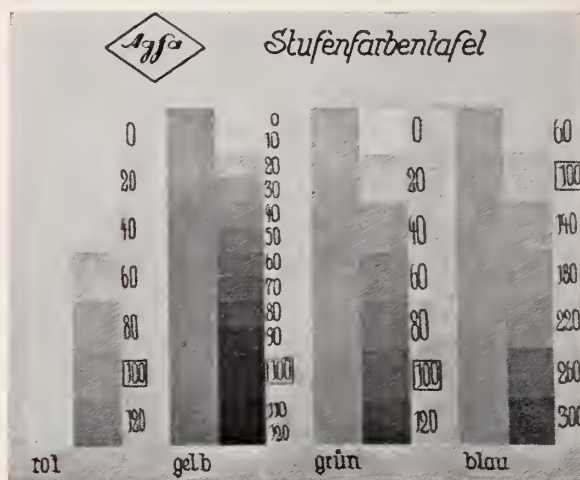


Fig. 2

practical test shots, or by following the recommendation of the filter- and film-manufacturer. There is no doubt but that the demand rather often exists for a method allowing for the testing of filters and color sensitiveness of film under various light conditions, which in its result would give simple numerical values, which everybody will understand and correspondingly depend upon.

The research laboratory of the AGFA in Germany has recently worked out a method, which in the above sense may become especially valuable to camera men.

It consists of a color chart (figure 2) with strips of four carefully selected pigment dyes: red, yellow, green and blue. (Figure 3 represents a sketch of figure 2 wherein the German designations are translated). It is not necessary for practical use to test out color rendition for color ranges between these four colors. Besides this, as the size of a 35 mm. picture frame is very small, it is advisable regarding the judging of the results to have the test chart limited to only four colors.

Adjacent to each color strip of this chart, one will notice a gray scale each step of which shows a figure. The distinctly framed figure 100 indicates that the intensity of light reflection or brightness of the corresponding gray field is of the same value as that of the corresponding color strip itself.

The exact matching of the brightness of this gray strip to that of the corresponding color has been accomplished in two different ways, which gave identical results proving that the selection is absolutely dependable. It is necessary to know that the matching was done for artificial day light, using a Mazda lamp of a color temperature of 2360° Kelvin and a Davis and Gibson liquid filter. Therefore, the figure 100 indicates that the brightness of the gray step corresponds with that of the color itself for day light.

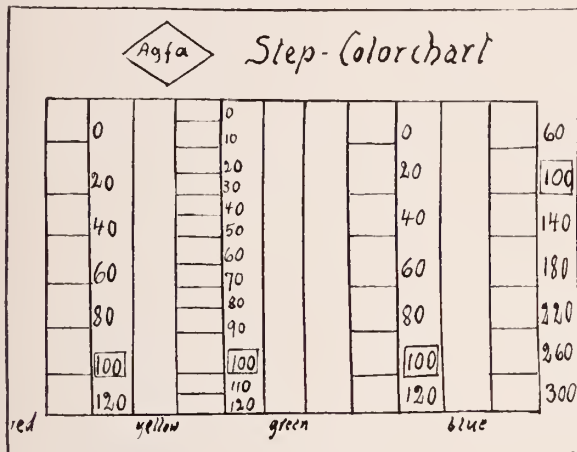


Fig. 3

The remainder of the figures, for instance 80, indicates that the brightness of its corresponding gray field is only 80% of that of the color, or if we take figure 120, that the brightness of its corresponding gray step is 20% higher than that of the color. Using this color chart for testing of color rendition of a certain film emulsion or of filters under varying light conditions regarding their influence on color rendition for a given film, the chart is photographed at normal exposure. In the developed negative, one simply compares the density of the deposits representing each color strip with that of the adjacent gray scale, thus finding which gray step approximates closest the color strip in density.

By reading the figure placed along this gray step, we have a quantitative result as to the degree the color rendition differs from the figure 100, that means from ideal color reproduction.

Figures 4 to 11 may demonstrate the practical use of this method.

Figures 4 to 6: Agfa color test chart, photographed on Agfa Cine Neg. Panchr.

Figure 4 using day light.

Figure 5 using white flame carbon.

Figure 6 using Mazda light.

Figures 7 to 9: Agfa color chart, photographed on Agfa Cine Negative Superpan.

Figure 7 using daylight.

Figure 8 using white flame carbon.

Figure 9 using Mazda light.

Figures 10 to 11: Agfa color chart, photographed on Agfa Cine Neg. Panchr. using filters.

Figure 10 using day light with Agfa yellow filter No. 1.

Figure 11 using day light with green-yellow filter.

The results read from the above tests allowing the quantitative measurement of color rendition of the two films under varying light- and filter-conditions are resumed in the following list:

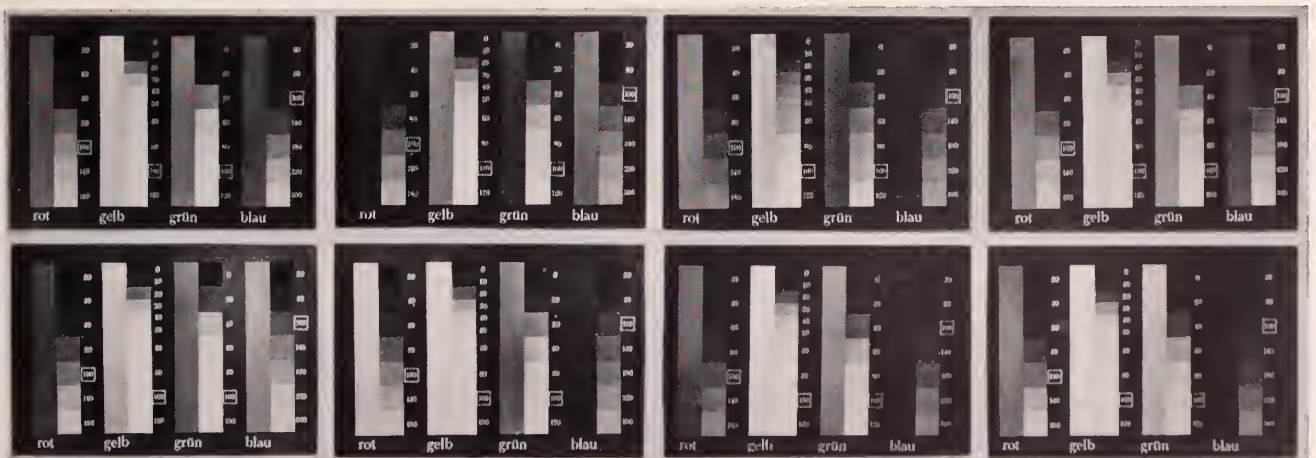
Without Filter:	red	yellow	green	blue
Cine Neg. Panchr.				
Day Light (fig. 4)	80	40	40	140
White Flame Carbon (fig. 5)	60	25	30	180
Mazda Light (fig. 6)	160	80	50	100
Cine Neg. Superpan				
Day Light (fig. 7)	100	60	40	120
White Flame Carbon (fig. 8)	80	35	30	160
Mazda Light (fig. 9)	180	80	50	80
With Filter:				
Cine Neg. Panchr.				
Day Light with Agfa yellow filter No. 1 (fig. 10)	100	70	60	100
with green-yellow filter (fig. 11)	100	100	80	80

Regarding the results from figures 5, 6, 8 and 9, one has to consider that although the exposures have not been made with day light the numerical values of color rendition refer to day light. The value 80 for the yellow therefore on Cine Neg. Panchr. with Mazda light (figure 6) indicates that objects of this color appear in photographic reproduction using Mazda light with 80% of the brightness, which the object itself shows to the human eye in day light.

Figures 10 and 11 demonstrate the corrections the color rendition with Cine Neg. Panchr. is undergoing by using filters.

The Agfa yellow filter No. 1 allows to render red and blue perfect, while green and yellow are still too light. In general, this degree of correction will be sufficient. In special cases, where extremely good color rendition is required, the use of a green-yellow filter is needed, which of course has a decided higher timing factor.

Figure 11 represents an exposure using a green-yellow filter; only the green is still somewhat too weak and the blue is a little too far reduced, while the rendition of the remaining colors appears now to be practically perfect.



Left to right, upper row: Figures 4, 5, 6, 7. Lower row: 8, 9, 10, 11

HAL HALL

says

Mr. Alicoate Says a Mouthful

WHILE the picture world has been bemoaning the depression and theatre patronage has been dwindling, a few of us have constantly yipped about the idea of making better pictures on the assumption that if you give the public something entertaining it will pass through the theatre doors. When we heard that the Capitol in New York set a new all-time boxoffice record with Greta Garbo in "Mata Hari" we began to think maybe we were right. And then came more reports of success. Our old friend, Jack Alicoate, Editor and Publisher of Film Daily, had a few words to say on the matter recently in his paper which are so much to the point that we reprint them for you.

"It seems rather bromidic, but it's such a truism that it surely rates constant repetition. Give 'em good pictures and to hell with the rest of it. Nothing else counts. During the past three weeks business has come back with a bang. Box-offices most everywhere are again playing a merry tune. Why? Pictures, my laddie-buck, and nothing else perhaps. Give a thought to what's what and who's who on the Big Stem right at the present o'clock and you have the answer neatly rolled up in rayon. Garbo in 'Mata Hari' breaking all time records at the Capitol. 'Dr. Jekyll and Mr. Hyde,' a 4-starrer, standing 'em up at the Rivoli. A roll call of further depression busters now playing the big time on Broadway would include the following and as fine a collective ship-load of entertainment as has been offered picture fans in many a day: Paramount's 'Ladies of the Big House.' 'Delicious' from the Fox factory. First National's 'Woman From Monte Carlo.' That delightful bit, 'Strictly Dishonorable,' from the Universal bake-shop. Warners' 'Manhattan Parade' and 'Safe in Hell.' The Universal super-thriller, 'Frankenstein.' Two dandies from United Artists, 'Arrowsmith' and 'Tonight or Never.' 'Hell Divers,' the M-G-M special, R-K-O-Pathe's 'Big Shot' and even a couple of better-than-average foreign pictures. Some of our more constructive thinkers see in the turn of the picture industry the fore-running advance agent of better times. Being the last to feel the effects of the depression, it is not unreasonable to suppose it the first to recover. At any rate, the picture business is off to a good start in the good old year of 1932. And, Long may she wave."

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ONE of the sanest notes we have heard sounded in many months is found in a survey by Roger W. Babson, noted economist, published in the New York "World-Telegram" and copyrighted by the Publisher's Financial Bureau. In this survey Mr. Babson declares that now is the time to plan and start advertising campaigns, and points out that those who prepare now and get the early start in the advertising campaigns will be the first to climb out of the depression.

He also points out that courageous advertisers right now can do more to restore public confidence, stimulate buying and hasten general business recovery than any other group. He says that many advertisers are holding back because they have the impression that there are more unemployed than employed, and points out that eight out of every ten men in the country are working.

Steincamp New Fox Camera Chief

THE reorganization which has been taking place at the Fox Studio has placed William H. Steincamp in charge of the camera and sound departments, with the title of Supervisor of Recording. He is assisted by Bob Bischoff, with Dick Baer acting as camera dispatcher, and handling the assignments of cinematographers and allocation of equipment.

Steincamp has a record of fourteen years service with the Fox Company, during which time he has worked in practically every department, financial, executive, and technical. He was for some time assistant to H. Keith Weeks, who until lately was general manager of the Fox Hills Studio and directly headed the camera and sound departments. More recently, Steincamp returned to the financial department, from which he was assigned his present position. With such a background, he should do well in his present post.

Unlike many incoming executives, Steincamp does not feel any reforms necessary in his department. "We have without doubt," he says, "the finest group of cinematographers in the industry in this department. My only policy is going to be to refrain from trying to photograph their pictures for them. Why should I? They are the best men in the industry, and I have every confidence in their ability to go out on the set and deliver the best in photography. I believe that I can best back them up by letting them do their work unhindered, and doing all in my power to assure them that what they see on the ground glass of their cameras, the laboratory will bring to the screen intact."

Such a policy should guarantee success. The American Cinematographer extends to Mr. Steincamp and his associates its best wishes, and to the executives who chose such men for these important posts, its congratulations.

The \$1000.00 Contest

ON ANOTHER page in this issue is an announcement that should be of great interest to those Amateurs using Filmo cameras. The Bell & Howell Company has added two prizes to be awarded the winners in the \$1000.00 Amateur Movie Contest which this magazine is now conducting. If the winner of the first prize of \$500.00 happens to have made his winning picture with a Filmo, he will receive his choice of a \$280.00 Filmo camera or a \$298.00 Filmo projector, bringing the value of the first prize to a present maximum of \$780.00. There will be more announcements later of additional equipment prizes that will be of interest to all amateurs. This contest bids fair to be the outstanding event in the 16 mm. world this year. Entries are coming in from all parts of the world, and we advise any serious amateur to start now on his picture and send in his entry notice at once. Never has the Amateur been given such an opportunity for personal achievement as in this contest which is sponsored by the American Society of Cinematographers. Amateur clubs in this contest will find an opportunity for recognition such as can be gained in no other way.



Return of the Fishing Smack

Allen Fraser



Virginia Landscape

Nicola Buzzo



Rocky Coast

Allen Fraser



Studio atmosphere

Gordon Head

The New "Artreeves" Recorder

OF INTEREST in the sound field this month is the newly announced recording head placed on the market by the Hollywood Motion Picture Equipment Company to go with the "Artreeves" Recording System.

This recorder has many novel features. It has two sprocket wheels, one acting as a pull down and feed sprocket and also acting as a takeup sprocket. The other sprocket is fed by a loop of film, and its purpose is to move the film over the recording block and feed it with a loop to the takeup sprocket. The recorder is constructed so that binding of the take-up or uneven pull of the magazine will not reflect upon the recording sprocket.

The recording block contains the optical unit which is permanently set in proper position and does not need further adjustment. The optical unit is set to carry a focus on the film in a light beam of .0007 of an inch in width. The recorder uses a standard Bell & Howell film magazine. The recording camera is threaded, as is shown in the accompanying illustration, with two small loops between the sprocket wheels. The idle rollers are thrown in and out by the knobs marked (R) and are locked in positive position. The idle roller opposite the recording block holds the tension on the film so it will travel smoothly.

The recording lamp is slid into the recorder as far as it will go. The recording lamp ring is fastened to the base of the

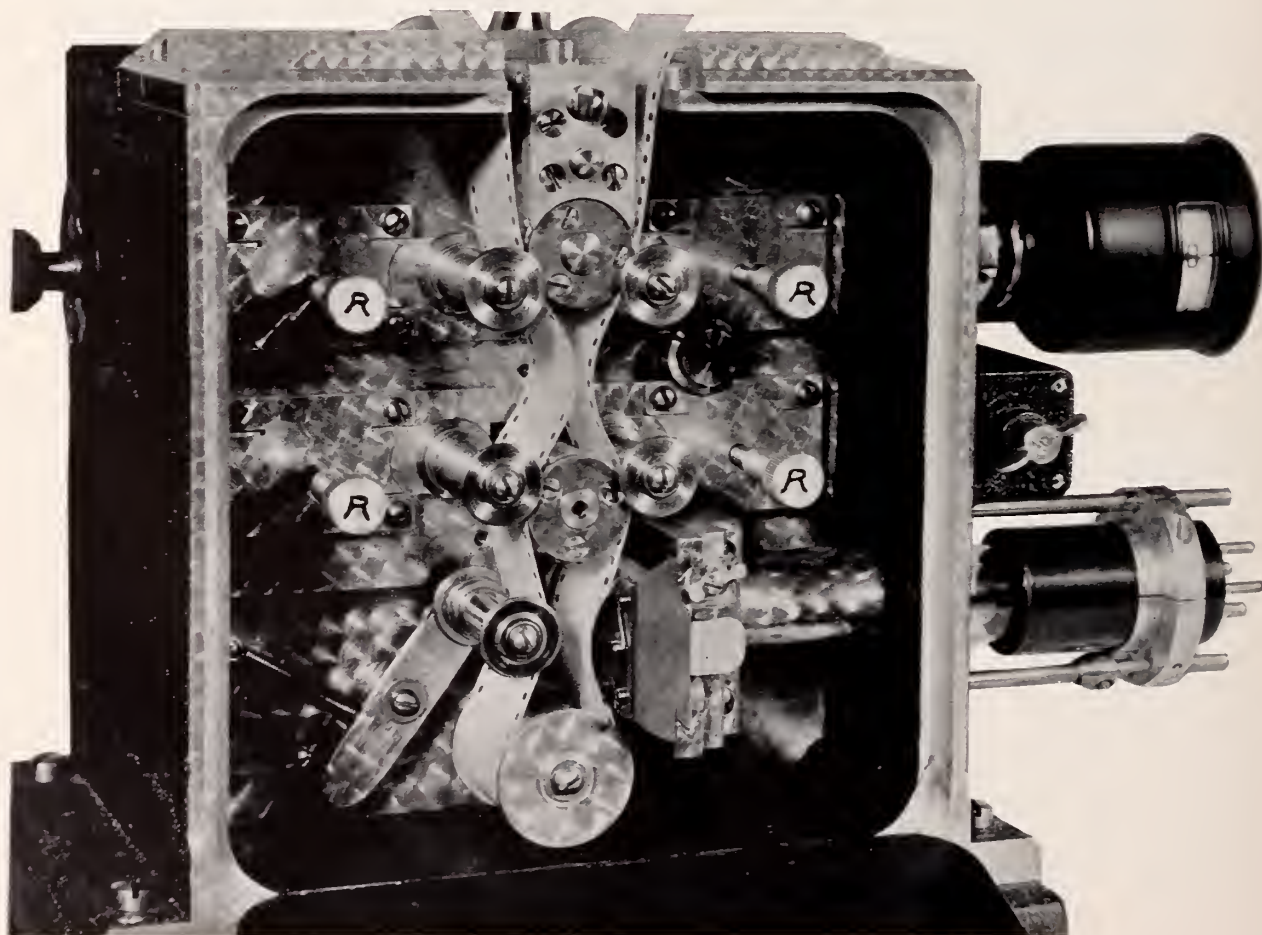
lamp by a clamp screw, the stops are slid into proper position so that the lamp may be placed in the same position upon replacement. The cathode of the lamp must be placed in recorder so it is parallel to the aperture of the optical unit. The motor is a D.C. interlocking type, operating on 110 volts at 1440 revolutions per minute. There is a rheostat control to regulate motor speed, which may be read upon tachometer. On the switch control under the motor there is one switch for the recorder, one for the camera motor and three joined together by a bar for interlocking.

The Depue Automatic Sound and Silent Multiple Printer

Another interesting bit of equipment now being handled by the Hollywood Motion Picture Equipment Company is the Depue Automatic Sound and Silent Multiple Printer. As shown in the accompanying illustration, the two center discs on the left side are used when making prints in multiple. Two prints may be made from a single negative in one operation. The first print is rewound on the upper disc while the disc below carries the raw stock which passes through the lower sprocket, making the second print.

This is really two machines in one. The picture is printed on the upper sprocket with the sound track masked off. The sound is printed on the lower sprocket with the picture masked off. Thus the picture and sound track have separate light con-

(Continued on page 25)



The new "Artreeves" recorder

THAT EXTRA MEASURE OF QUALITY

EASTMAN Super-sensitive Panchromatic Negative has consistently brought camera-men the finest ultra-speed emulsion on the market. Now, when coated on gray-backed base, it is an even greater product—one that is rapidly becoming the mainstay of the forward-looking cinematographer.

If you are not yet using this perfected super-speed negative, begin *now* to benefit by the extra measure of photographic quality which it brings. Study it—with the help of your Eastman technical staff—and use it in your next picture. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *SUPER-SENSITIVE*
Panchromatic Negative (*Gray-backed*)

Concerning Cinematography

Critical Comments on Current Pictures
by **WILLIAM STULL, A. S. C.**

NO ONE MAN

◆ "No One Man" is decidedly the most perfectly photographed picture seen this month. Cinematographer Charles Lang, A.S.C., has good reason to be proud of his work, for it is intrinsically beautiful without being spectacularly "arty," and it adds a deal of production value to an ordinary program picture. Lang had good material to work with in the sets, costumes, and players, as well as an intelligent director to work with: but it is his individual contribution—his cinematic artistry—that raises this film far above the level of the ordinary program picture.

All of the action is played upon rich settings, and Lang's lightings and camerawork enhance these greatly. The sequence in the Florida estate in particular is played against highly pictorial sets, and Lang's camera work adds tremendously to this effect, for he has treated it with such artistry that a pictorial atmosphere far beyond the reach of even the best art-director is established.

His lighting of the players is no whit behind his treatment of the sets. Never, for instance, has Carole Lombard appeared to such advantage. If any criticism could be raised, it would be that in some of the closer shots he has lit the faces a bit too flatly. In general, however, his personal lightings are worthy of careful study by professionals and amateurs alike. The latter, especially, will do well to notice how in many scenes he has managed to light Miss Lombard quite softly, while at the same time employing more virile lightings for the men playing in the scene with her.

PRESTIGE

◆ At the other end of the scale comes "Prestige." Lucien Andriot has done a commendable job under insuperable difficulties, for his hands were obviously tied by director, script and laboratory. The story is intrinsically weak, and it is rendered weaker by the absurd attempt made to secure cinematic motion through incessant camera-movement. Throughout the first half of the picture the camera is hardly stationary for a moment, perambulating unbrokenly in and out of stock-shots, miniatures, exterior and interior sets, and around the actors. All of this movement is done without rhyme or reason, and succeeds only in confusing and annoying the audience. This in itself is bad cinematics, but it is rendered far worse by the fact that it emasculates several legitimate moving shots occurring later, at the climax of the picture. Had the early part of the film been treated conventionally, these later moving shots would have served their dramatic purpose, and added force to a film that needed it badly.

Andriot's lightings are surprisingly excellent when one considers the circumstances—that every scene was lit for a trucking or crane shot. The sets are excellent. There are likewise several really beautiful long-shots taken upon a river while the company was on location in Florida. Andriot has likewise managed to convey a vast deal of the sultry, nerve-cracking atmosphere of the tropics through his photography of the latter half of the picture. In the guillotine sequence, the application of sound as a dramatic aid is also notable. The print viewed was rather poor, and contained a tremendous footage of unusually poor "dupes."

THE SILENT WITNESS

◆ I wish that I could state that this film was the last of that miscegenate race, the photographed stage-plays, but there will probably be many more before the box-office convinces

the producers that only genuine motion pictures, made by picture-minded people, are profitable. This picture, unfortunately, won't do it, for it is excellent entertainment, despite the fact that it is a cinematic atrocity. The story and cast are excellent, while the direction and cinematography are absurdly amateurish.

It seems unfair to place the entire onus of these shortcomings upon Joseph August, A.S.C., the cinematographer, for he is a capable workman, a more than good artist, and a highly experienced cinematographer; yet much of the blame must be his, for the film was directed by two inexperienced men—one fresh from the stage, the other armed with scant studio experience. And in such circumstances, it was August's duty as a cinematographer to see to it that, inexperienced as the directors were, they at least might be protected from making any grave cinematic blunders. Knowing August, the only inference is that his hands were tied either by the front office or by the directors themselves. Certainly, such mistakes were made in profusion, for the cutter was obviously given insufficient material to work with. Entrances and exits were ill-timed for good cutting, the geography of sets was insufficiently painted, and later close shots made from such angles as confused this. It is the cinematographer's professional duty to see that, if the director is ignorant of such details, they are none the less correctly handled.

August's treatment of the purely photographic details of the picture also indicates that something was radically wrong somewhere. Nearly all of the long-shots were made with the camera far too high; some seem to have been made from a parallel, even. The lightings are "early Vitaphone," and practically all of the scenes are photographed without any of the diffusion and softness that the picture needs to bring out the atmosphere of mystery. All of this is distinctly unlike August's usual type of work, and can only be explained by some unusual pressure brought to bear upon him either by the directors, executives, or perhaps the general turmoil in which the Fox studio has lately operated. Some of this trouble, too, is traceable to the laboratory, for the print was not uniform, and was excessively contrasty.

FRANKENSTEIN

◆ Comparisons are always odious, but it is none the less interesting to compare the photographic treatment given "Frankenstein" by Arthur Edson, A.S.C., with that given "Dr. Jekyll and Mr. Hyde" by Karl Struss, A.S.C. Both stories are of much the same type; both cinematographers are artists and technicians of the highest calibre. And the results are antipodally different.

"Dr. Jekyll and Mr. Hyde" was photographed in a crisp, harsh manner that accentuated the realism of the setting and characters and threw the unnatural character of Hyde into bold relief. "Frankenstein," on the other hand, is treated more conventionally, with moderately soft, low-key photography that stresses the mysterious more than anything else. Each film is superb work in its kind, leaving little room for aught but praise for the directors and cinematographers concerned.

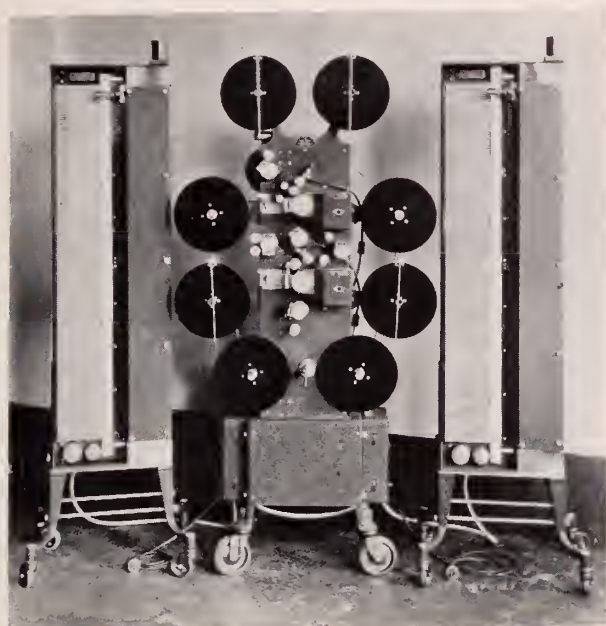
The sequence of the creation of the monster is a particularly striking episode, although greater restraint in the use of both angle-shots and sound would have improved it. The sequence at the village wedding-festival is somewhat overcorrected, but is none the less a remarkable example of atmospheric value as planted cinematically. The sole technical fault of major proportion

(Continued on page 40)

The New "Artreeves" Recorder

(Continued from page 22)

trols but are printed in one operation. This machine operates at a speed of 85 feet per minute. Contact is secured without air pressure. All four rewinds are operated by a single belt 40 watt lamps are used. The apertures on both printing heads



The Depue automatic sound and silent multiple printer

are selective. The footage numbers on the edge of the film can be printed if desired.

The Chicago Sound-on-Film Projector

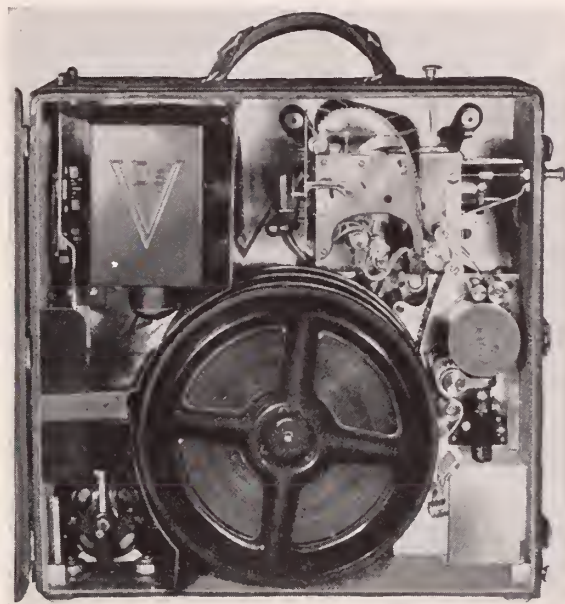
Herman A. DeVry, Inc., has produced an efficient portable 35 millimeter sound-on-film projector which is also on display at the Hollywood Motion Picture Equipment Company showrooms. Simplicity seems to be the keynote of this projector which has been named the "Chicago." It is contained in a case 17x17x7 inches and weighs only 35 pounds. The projector is equipped with DeVry photocell and the sound unit, developed by DeVry, is an integral part of the projector. An adjustable film gate permits the use of silent film as well as that with sound track. The amplifier is of 16 watt capacity. The speed of the projector is controlled by an electric governor which drives the film through the mechanism at a constant speed.

Paramount Increasing Production In England

TO PROVIDE facilities for turning out British pictures well in excess of the quota requirements, Paramount is tripling its production space at Elstree in association with British & Dominion Film Corp. Production under the new layout is expected to be in full swing shortly.

"Grand Hotel"

ONE of the most imposing groups of players yet to appear in one motion picture is found in M-G-M's "Grand Hotel." If names mean anything to the theatre-going public, this one should pull them in. The following appear: Greta Garbo, John Barrymore, Joan Crawford, Wallace Beery, Lionel Barrymore, Lewis Stone, Jean Hersholt, John Miljan, Rafaela Alliano, Purnell Pratt, Tully Marshall, Murray Kinnell, Edwin Maxwell, Frank Cameron, Kathryn Crawford, Ruth Selwyn and Mary Carlisle.



The new DeVry projector

"Silent Talkies" Teach Deaf to "Hear" With Their Eyes

AND NOW they're talking movies for the deaf and hard of hearing. These movies might rightly be styled "silent talkies," at least as far as the congenitally deaf are concerned, for the latter receive no sensation of sound as they view the pictures, though they readily learn to "hear" with their eyes the conversation of the talkie characters.

Ohio State University has been conducting interesting experiments along these lines, according to the Bell & Howell Motion Picture News Service. Under the direction of Dr. G. Oscar Russell, chief of that institution's phonetics laboratories, Miss Marie Mason has been working with talking pictures especially designed to give increased lip reading facility to those of defective hearing.

Talkies in which lip motions and other facial movements, together with body gestures, are introduced according to a carefully determined plan are produced in the laboratory studios. Then the pictures are shown for lip reading study. By means of 16 mm. motion picture projectors the movies can be conveniently shown over and over again until every speech movement and emotional expression has been correctly interpreted.

A talkie sound record, synchronized to the film speech movements, is made on phonograph type discs when the pictures are filmed, and this is used primarily as a control on the validity of the original film to enable the instructors to assure the correctness of every speech movement used by the talkie characters. Frequently, for example, the characters in a talkie may make motions with their lips without uttering a sound. Instances of this and similar character are detected by means of the talkie record, and the film is then re-edited or retaken so that these may be eliminated and hence not confuse the learners and have them "hear" sounds that were never made.

Doctor Russell states that practically one-tenth of all college students in this country and Europe are shown by careful surveys to be afflicted with hearing difficulties severe enough to result in failures in their studies. Due to the introduction of the talkie visual hearing instruction method at Ohio State, he asserts, student academic failures due to defective hearing have been measurably decreased.

It is easily conceivable that any one with defective hearing can, by viewing with a home movie projector right in his own living room such movies as Doctor Russell and Miss Mason have been experimenting with, gain fine lip reading facility.

Common Sense and Camera Angles

(Continued from page 9)

way to photograph the scene would be from the normal eye-level. On the other hand, a shot of the group taken from directly above might be enormously effective intrinsically; yet it would be entirely out of place unless there was a legitimate dramatic reason for it. If, for instance, one of our characters is a spy, or a criminal, hiding in an upper floor of that house, and eavesdropping upon this conference through a hole in the ceiling, such an angle-shot would be vitally necessary, for it would give the audience his reaction to the situation in a way that nothing else could. Similarly, if he were hidden under some piece of furniture in the room, a shot of the group at the table from an unusually low angle would be equally desirable, for the same reason.

But the use of camera-angles extends beyond this. It definitely enters the realm of the psychological. It can convey the underlying significance of a scene as nothing else can. Take, for instance, a sequence from "Dr. Jekyll and Mr. Hyde." Dr. Jekyll has suddenly found himself transformed, involuntarily, to Hyde, with no way of returning to his laboratory to secure the chemicals necessary to return him to his real self. In his extremity, he is forced to call upon his friend, Dr. Lanyon, who brings the necessary potions to his own house, where Hyde is forced to use them to restore himself, changing back to Jekyll before Lanyon's horrified eyes. In the scenes which follow, Jekyll, physically and emotionally exhausted, pleads with his friend for forgiveness. Double strength was given to these scenes by the camera angles used. Jekyll is crumpled up in a low chair, pleading piteously with his friend; Lanyon sits behind his desk, which is on a dais, as one on the Throne of Supreme Judgment. The angles from which each is photographed subtly heighten this contrast: Jekyll is always photographed from above, looking up into the camera—an abject suppliant. Lanyon is always photographed from below, looking down at the camera—a stern and uncompromising judge. To enhance these visual contrasts, I placed Jekyll in the lowest chair in the studio, and Lanyon (already on a raised platform), on the highest, severest chair in the studio, to which I added three-inch lifts under the legs.

The same ideas must apply to camera movement, as well. The idea that camera-movement will give cinematic movement to an otherwise static scene or study, so prevalent among directors and executives, is basically false. Camera movements,

used where there is no dramatic necessity for such movement, injures rather than aids a picture. It focuses the attention of the audience on the mechanical rather than upon the story, and confuses instead of clarifies the issue. Unjustified movement is a sign of directorial weakness, rather than strength.

Once camera movement is decided upon as dramatically necessary, however, director and cinematographer must cooperate closely in realizing it with the utmost of technical and artistic perfection, for a badly-executed move is worse than none at all. Many factors must be considered: speed, direction, angle, and above all, rhythm. The preceding action will inevitably have established a definite dramatic (and often physical) tempo or rhythm: the moving-camera scene must follow out the same rhythm, or, in some rare instances, increase it.

These moving shots must, of course, be perfectly conceived and rehearsed. Rehearsal is vital, for if they are not well rehearsed, the mechanical element is likely to intrude, and tear down all the atmosphere that you have been at such great pains to build up. These scenes, too, demonstrate the necessity for photographic-mindedness in the director; otherwise, he may impose upon his camera crew scenes that are photographically impossible. Similarly, the cinematographer must be sufficiently a director to know when such scenes are dramatically necessary, and when more conventional methods would be preferable.

Another point where cinematographer and director must be perfectly agreed is the mood of the photography which best suits the picture. Too many directors are satisfied to take whatever the cinematographer chooses to give them in this respect; too many cinematographers are willing to treat everything conventionally, overlooking the dramatic value of a scene in an effort to make it prettily pictorial. But some stories demand one type of photography, others demand a different type. Some, like, for instance, "Smilin' Through," demand photography that stresses the romantic elements—soft, delicate, pictorialism. Others, like "Dr. Jekyll and Mr. Hyde," demand virile, realistic, almost brutal treatment. Of course, realism does not connote any abandonment of the principles of composition or lighting, but it does signify an abrupt departure from mere conventional prettiness. To my mind, "Dr. Jekyll and Mr. Hyde" gained force from the fact that both Karl Struss and I were early agreed that realistic, harsh photography was best suited to it. Karl's treatment of it at once heightened the realism of the central characters, and threw the character of Mr. Hyde into sharp contrast by ruthlessly exposing its unreality. Let me also pay Mr. Struss a richly-deserved tribute for this achievement, for the complete bouleversement of his usual artistic style revealed him to be an artist of the highest calibre.

Motion pictures are bound to progress mightily as cinematographers and directors alike learn more and more of the dramatic uses of the camera, and as they learn to cooperate more closely and understandingly. Artistically speaking, the Art of the Cinema is yet young, though its technique is well developed. It is a fascinating field of effort, for we are still pioneers: upon us, the directors and cinematographers of today, depends the artistic future of this new medium. Out of our mutual understanding and cooperation today will come the artistic developments of tomorrow. The full development of this new medium, the speaking cinema, rests with us, to establish its conventions, and to make it the powerful medium that it can be.

What! Another Hollywood?

IT IS REPORTED at Cannes that a group of powerful European financiers will soon launch a scheme to build a great film colony in that city, making it a European rival of Hollywood. Land, it is reported, has been obtained just outside of Cannes—130,000 metres in area—upon which ten fully equipped studios will be erected, along with hotels, restaurants, villas, a casino and a zoo. The new venture is to be known as Cannes Film City. Work will get under way, it is believed, in the very near future.

For Best Results in Cinematography—Use

Max Factor's Make-up

"The Preference of the Profession"

Now used in 96% of all Motion
Picture Studios **EVERYWHERE**

Max Factor's Make-up Studios

HOLLYWOOD

CALIFORNIA

..In the Realm of Sound..

Sound in Public School

THE FIRST step in the recently announced program to test the potentialities of the sound motion picture as an aid in teaching in the New York public schools was taken last month when contracts were signed for the installation of RCA Photophone sound reproducing equipment in the new Samuel Gompers Industrial High School for Boys, 145th Street and Wales Avenue, The Bronx, which is now under construction and which will be open in September. The equipment, one of the recently introduced all AC operated types, will be installed in the assembly room which will have a seating capacity of 724 persons.

Provisions for the installation of motion picture apparatus having been made when the plans for the new building were drawn, the projection booth and necessary wiring throughout to the loud-speaker apparatus behind the screen, will be modern to the most minute detail.

Dr. Eugene A. Colligan, Associate School Superintendent in charge of the visual instruction activities of the New York Board of Education, recently announced that he had suggested experimenting with sound pictures and it is said that other installations will be made in high schools within the next few months.

Dr. Charles Pickett will be principal of the new Samuel Gompers High School which will have a pupil enrollment capacity of 1696 boys. In addition to sound motion picture apparatus, the new school will be equipped with a complete radio communication system with outlets and speakers in all parts of the building. A radio control room will adjoin the principal's desk and through the medium of a microphone, the principal will be able to speak to one or all rooms or even to students upon the outdoor courts. Seventy-six loudspeakers will be located at various points of vantage.

Film Scale Measures Footage, Running Time

MARKETING of a film scale which enables a projectionist to tell at a glance, before the show, the approximate footage and length of time necessary to project the regular show and trailers, has been announced by King Cole's Entertainment Service, Inc., of New York.

The device has a small running slide on the scale which rests on the rim of the reel while the scale itself is pushed down until contact is made with the film. The reading of the film scale at the point of the slot on the slide, it is declared, will then give the approximate footage and running time at 90 feet per minute.

With the aid of the film scale the projectionist has been able to gauge his show to within one minute of the actual showing time of a two-reel program, the company declared.

New Paramount Silencer

A HEAVY paper, made of wood pulp, and a half-inch thick has been invented by scientists, under the supervision of sound and acoustic experts at Paramount's Hollywood studios, for use on floors of settings to muffle footsteps. This solves a costly and troublesome problem for producers, as such noises often interfere with dialogue recording. The new floor paper was tried successfully for the first time in the making of "This Reckless Age."

New Arcs For Fast Film

E. A. WILLIFORD, manager of the carbon sales division of the National Carbon Company, announces that new arc lamps are now in process of development which will incorporate the qualities of quietness, remote control, low maintenance cost and high efficiency.

An interesting folder reveals the fact that the National Carbon Company has been very actively engaged in experiments with arcs and the new fast film. Photographic results as shown in the folder would indicate that much success has been met with. The National Carbon Company is stressing the following points of advantage in the use of arcs: depth, full roundness of modeling, distinct color separation and natural blending from deep to lighter hues, accurate color tone values with no over-correction and consequent flatness, softness of pictorial effect, and economy because of photographic speed.

Cutler-Hammer Puts Out Current Control Device

A NEW automatic current controller for arc projection machines, designed to replace the usual knife switches used to control the current to the carbons of the projection machine, has been put out by Cutler-Hammer, Inc., of Milwaukee.

The controller proper, it is claimed, can be mounted with the resistor in any out-of-the-way place. Only the push-button master switch is mounted on the machine, near the operator. By simply pushing the "start" button of the master switch, the operator obtains a low current for warming carbons. Then after a definite time interval the transfer to high current for normal projection can be made by pushing the "run" button in the master switch. The definite time interval (about one second) which must expire before the projectionist can transfer from low or starting current to the high running current, assures that the carbons are sufficiently warm, thereby preventing sputtering and its resulting damage to the craters and reflectors.

The single control scheme, it is declared, gives the projectionist more time to adjust properly the carbons of the machine, assuring better operation, less maintenance and greater safety.

RCA in Texas

RCA PHOTOPHONE, INC. has been awarded a contract for the installation of sound reproducing equipment in twelve state institutions in Texas according to announcement by E. O. Heyl, Vice-President and General Sales Manager, at the corporation's office, No. 411 Fifth Avenue, New York City. The award was made by the Board of Control of the State of Texas at its office in Austin which rendered its decision following the opening and consideration of sealed proposals that had been submitted by RCA Photophone and other leading manufacturers of sound reproducing apparatus.

Burt King, district representative of RCA Photophone in Texas, conducted the preliminary negotiations.

The contract covers the installation of eleven special size all AC operated sound reproducing units which were designed for auditoriums up to 500 seating capacity and one standard size all AC operated unit which was designed for auditoriums up to 1200 seating capacity. It is said to be the largest single contract of its kind ever awarded.

Laboratory Department

Conducted by EMERY HUSE, A. S. C.

Principles of Sensitometry and Their Practical Application

Part 10

SENSITOMETERS of the non-intermittent or continuous type are, at the present time, the only acceptable sensitometers available. It has been shown previously that certain errors enter into precise sensitometry when based upon the intermittent exposure. The non-intermittent instruments are of relatively recent application, but several investigators have made a study of sensitometry based upon continuous exposures.

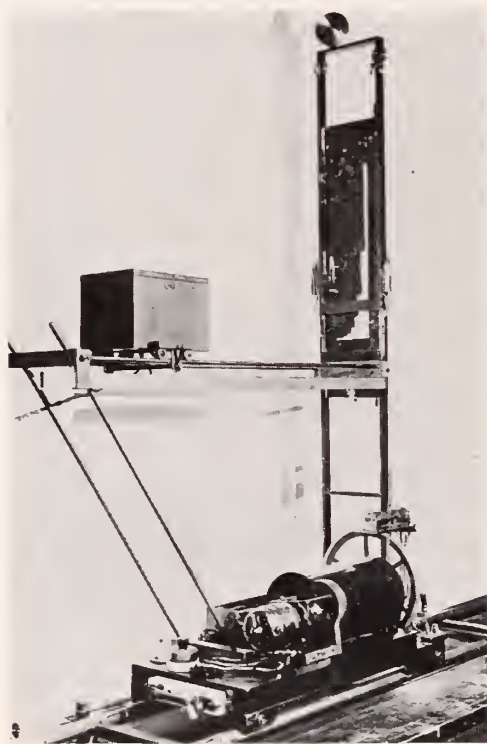


Fig. 8

The errors inherent in time scale instruments of the rotating sector wheel type have led to the development of several types of instruments in which this objectionable feature has been removed. In Figure 8 there is shown a form of sensitometer of a non-intermittent type. This instrument consists of a slotted plate carrying a series of apertures varying logarithmically in length, the plate being guided by vertical ways and driven at a uniform linear velocity by means of a motor driven chronograph mounted on the base of the instrument. The motor used is of the governed type, thus giving a relatively high precision timing. This plate as it descends passes in front of the photographic material held in a container placed on the opposite side of the falling plate from the light source. Other forms of instruments using a slotted plate have been made, in which the plate travels across the photographic material. An instrument of this kind is also actuated by electrical means. Another form consisted of an opaque which is allowed

to drop at predetermined intervals in front of the photographic material, thus cutting the illumination incident on various areas at a series of times so calculated as to result in the desired time scale of exposure. An instrument of this type is also electrically operated.



Fig. 9

Where it is desirable to use a series of exposure times which are relatively short, a better plan of sensitometer is one in which a sector disc is allowed to operate continuously at a fixed and relatively high angular velocity and then to use a selector shutter operated in synchronism with the sector disc so that the photographic material is subjected to illumination resulting from only one cycle of the disc. Various sensitometers based on this general principle have been made. One such instrument is shown in Figure 9. The sector wheel in this instrument is mounted in the housing D, the standard light source in the housing H, and the sensitive material is held in position in the exposure plane by means of a holder E. The driving mechanism which consists of a synchronous motor is mounted on the base at the extreme left and a one-turn mechanism serves to pick up the sector disc and carry it through exactly one revolution.

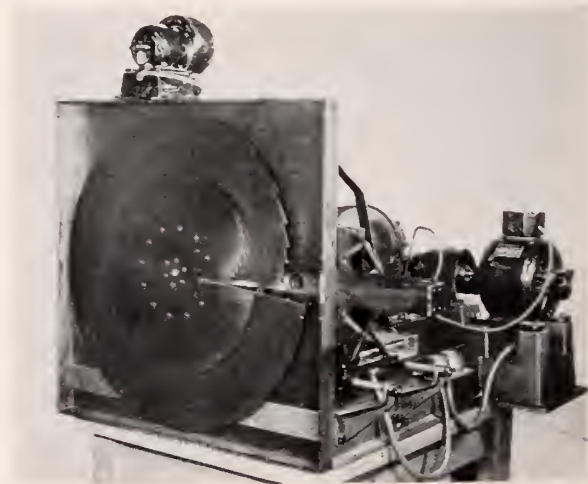


Fig. 10

A sensitometer of similar design, Figure 10, has been built in which the exposure time scale is extended to much shorter times by the use of a one sector disc mounted on a shaft

(Continued on page 46)

What's What in Make-Up

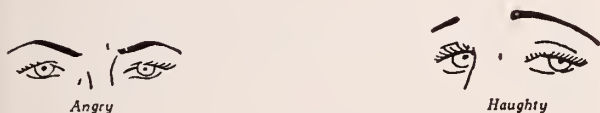
The Eyebrows

The accompanying illustrations show only a few of the striking types that are characterized by the arrangement of the eyebrows, features that are especially notable in the Oriental, Svengali and Mephisto types.



Left: Oriental. Center: Mephisto. Right: Svengali

In the Oriental eyes the brow is quite a distance from the upper lid and the eyes take on a decided almond shape. The shape is created with the dermatograph pencil, extending the line on the lower lid at the outer corner of the eye upward to be parallel with the new eyebrow. The line on the upper lid extends slightly down on the nose on the inner corner of the eye.



Angry

Haughty

The Svengali eyebrows are decidedly pronounced. Heavy and close eyebrows are most always associated with brutal, fiendish types. Mephisto's pointed nose and chin by no means consummate the character. The eyebrows properly shaped complete his characteristic expression.

Scars

There are many types of scars. When it becomes necessary to make a scar, we should understand its construction and the art of creating a realistic effect. There are many methods, but we will describe in detail the simpler ones known to the profession.

1. **Welts**—The average scar appears as a welt and not as an indentation. It is caused by a blow, and is somewhat different from that caused by a knife wound. This type of scar can be created by the use of a nose putty. Apply the nose putty over the scar area, building up in the center and smoothing off the edges into the foundation make-up. The raised surface may be colored with a grey-blue lining color, No. 6, accentuating the bruised part of a welted scar. The line of a scar should be irregular and never straight.

2. **Indentations**—(Use of Collodion). Non-flexible collodion is used for making indentations—it gives a realistic effect. Apply it with a brush directly on the place where the scar is desired. Allow to dry, and if the recession is not deep enough, apply another film of collodion and allow to dry. Repeat until recession is as desired. Usually, three or four applications are sufficient. Collodion scars may be removed by dissolving with Acetone, or they may be peeled off.

An indentation scar may be effected by the use of nose putty. Spread it well over the spot where you wish the scar, raising up the center and smoothing the edges well into the complexion. Then, with a paper stump or any similar instrument, make a crease in the center and line it with dark Red color,

No. 9 lining color. High light with No. 11 Yellow, or No. 12 White and blend the edges well together.

3. **Old, Flat Surface Scars**—In making an old scar, it is a matter of resembling the discolorations by the use of proper colors. Scars may be of any conceivable size or color. The dark parts of scars require a low light—a No. 9 lining color, Maroon. Highlight edges with a contrasting color, a No. 12 White or a No. 11 Yellow. The illusion is completed when the edges are carefully blended. Some scars can be made to appear very natural by touching up here and there with a little Purple, No. 8, and Yellow, No. 11.

Cauliflower Ears

To create the natural effect of a cauliflower ear, take a piece of cardboard about half an inch wide by an inch and a half long and cut it. Place a hair-pin in the center, the length of the cardboard, and fasten it with tape that is adhesive on both sides. Bend to form an angle, as illustrated. Then attach behind the ear, one-half adhering to the head, the other half to the ear, forcing it out at an angle. Then model inside of the ear with nose putty, giving it the puffy appearance of a cauliflower.

The Teeth

In the ensemble of our features the teeth contribute much to the expression of the face. If they are discolored or too far apart these defects destroy much of what would otherwise be a pleasing expression. When teeth are too far apart the spaces may be filled in with gutta percha especially prepared for the layman's use. Discolored teeth can be effectively concealed by the use of tooth enamel, a preparation for giving teeth a uniform coloring.

Black tooth enamel, a quick drying film-forming liquid, is used to block out teeth for grotesque characters, such as old hags, witches, misers and comedy parts.

Your Make-up Materials

The amount of make-up material that is necessary to keep on hand will vary according to the purpose and interest of the amateur or experimenter, or the amount of work of the professional. Enough make-up should be on hand to complete whatever type or character you intend to portray, as the absence of a preparation would impair your success. Character requires a larger number of shades of grease paint, powders linings, etc. A complete list of the requirements for the Professional or the Amateur is as follows:

Grease paints, lining colors, face powders, lip rouge, dry rouge, under rouge, cold cream, clown white, burnt cork, nose putty, liquid make-up, black masque, white masque, tooth enamel, black tooth enamel, spirit gum, collodion, crepe hair, assorted shades, combs, scissors, chamois liners.



W. E. Replacements

REPLACEMENTS of other types of equipment with Western Electric Sound Systems now total 2,232, according to C. W. Bunn, General Sales Manager of Electrical Research Products. Of this number, 1,736 are domestic replacements and 496 in the foreign field.

In the Art Director's Field

The Set As An Actor

by CEDRIC GIBBONS

Supervising Art-Director, Metro-Goldwyn-Mayer Studio

It may seem to many of us that a motion picture set is "just a set"—and nothing more. But a properly designed and photographed set can often be much more: it can be an actual actor in the scene. It can play an heroic part, or a villainous one—and it can, if story, set-design, direction and photography are not perfectly synchronized, likewise be as much a camera-hog as any living actor.

It may seem far-fetched to consider that a set—a mere background—can be an actor; but let us consider, for instance, the part that the sets play in such a film as "Grand Hotel," which is now in production. All of the action takes place in a great metropolitan hotel—one of those perfectly regulated modern palaces in which, as the old doctor complains, "nothing ever happens." And yet, during the short course of the story, a baby is born, a woman nearly commits suicide, and a man is murdered; a poor clerk, with but three months to live, comes there to live in luxury during his last days, and a great but ageing dancer finds life intolerable because, although deemed a success, she finds success and romance eluding her. Surely here the sets must be actors as well as backgrounds. I believe that that was the conception of the author: at any rate, I have tried to express it in my sets, and I know that Edmund Goulding and William Daniels are directing and photographing the picture with the same thought in mind. In the public rooms of the hotel—the lobby, the great dining room, and the corridors—the sets must surely be actors, for by their magnificence they must motivate much of the action. On the other hand, the bedrooms—especially that of Grusinskaia, the dancer—must be merely pleasing backgrounds to the dramatic action carried by the human players. Such differing dramatic purposes must be taken into consideration not only in designing the sets, but in realizing the action transpiring upon them.

Now, how are these ends to be attained? In the first instance, where the sets must be actors, by so designing the sets as to emphasize the splendor of the great hostelry's public-rooms, and further, painting them in colors that present vivid photographic contrasts, so that, even though in most of the closer shots the set may be somewhat out of focus, the audience is always conscious of the set. In the second instance, where the set must serve solely as a background for the dramatic action, by keeping both the design and coloration of the set severely plain and simple, so that the set does not attract the attention from the action. The cinematographer's handling of these sets, too, plays an important part in determining whether the set is actor or background, for if he wishes it to be (as in the first instance) an actor, he can light it in such a manner as to aid it in attracting its share of attention from the spectator, while if he wishes it to be but a background, he can light it less obtrusively, and concentrate his lighting effects upon the players.

The greatest discretion, of course, must be observed by both Art-Director and Cinematographer in determining whether any given set be treated as an actor or as a background. The dramatic and psychological requirements of story, characterizations and scene must all be carefully appraised before the decision is made. Obviously, no inflexible rule can be laid down for this: for although it is axiomatic that the best sets are those which do not attract attention to themselves, the reverse, as indicated above, is frequently true. It rests, therefore, with the artistry and dramatic sense of the Art-Director

and Cinematographer to decide what is to be treated according to rule, and what is to be made an exception.

The choice of camera-angles is another factor which must be considered in this connection. Certain directors—rightly or wrongly—have a penchant for shooting their long-shots through parts of the set, as through a frame. At times, this can prove highly effective—but as a rule it is otherwise, for it is both bad art and bad dramatics. In the first place, it is usually painfully obvious. After all, the camera represents (or should) the eye of the audience; and when we look at a thing, we concentrate our attention on the thing itself—not on such objects as may lie between it and our eyes. If we look out into the street through a window, and see a friend walk by, we lose consciousness of the window-frame, and focus on the person going by. If we stand by the window, and the cord and ring of the curtain is in our way, we step aside, to gain an uninterrupted view. If we are in a large room—say a hotel lobby—and our friend approaches, we see him—not the chairs, pillars, and potted palms between us. This same natural habit should guide us in photographing such scenes for a motion picture. Using a part of the set, or deliberate "masking pieces" to frame a long-shot may make an individually attractive scene, but it also detracts from the dramatic value of the scene, and slows the tempo of the sequence. The only exception, of course, is in instances where it is deliberately intended to call attention to the set—where the set itself is an actor. But even here, this habit of framing action with part of the set must be approached with restraint, for if too frequently repeated, it becomes ineffective and monotonous. Frequently at some point in the story such a shot may serve a legitimate dramatic purpose: but if too many of the preceding long-shots are treated the same way, for no dramatic reason, but merely to be arty, the really important shot is emasculated.

On the other hand, in certain cases, where a shot is made from an unusual angle—either unusually high, or unusually low—art, realism, and dramatic purpose all demand that such foreground objects be included. Let us, for instance, imagine that we are shooting from a platform of the New York elevated at a group of tenement-children playing in the street. In such a case, the feeling of the scene will be perceptibly heightened if we include the top of a telegraph-pole, with its crossbars and wires, in the foreground, and several other complete poles in the background, or, alternatively, if we place our camera so that we include the whole of the first pole in the scene: this will aid in conveying the impression of height, not only by the well-known laws of perspective, but also by the sub-conscious reaction to seeing the top of the pole—which everyone knows to be twenty or thirty feet high—in the foreground of the picture. Similarly, a great deal of the punch of shots of an approaching train, made with the camera buried in the center of the track, is due to the perspective furnished by the two lines of the shiny rails converging in the distance.



New Catalogue From Hollywood Camera Exchange

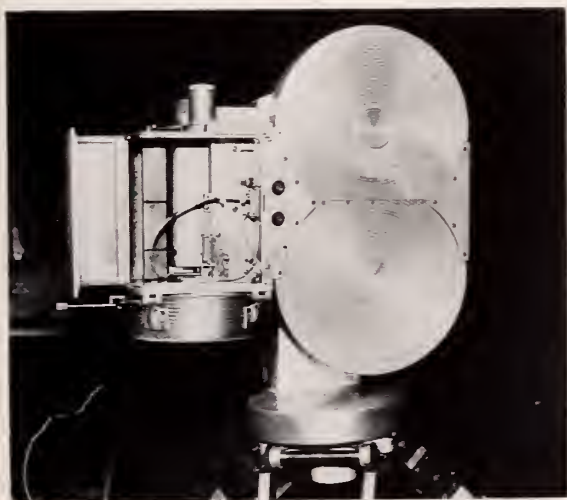
FOR those who are seeking real bargains in photographic supplies and equipment, a new catalog just issued by the Hollywood Camera Exchange, 1511 N. Cahuenga Boulevard, Hollywood, Calif., holds much of interest. Hundreds of bargains are listed in this catalog which is profusely illustrated. Both amateurs and professionals will find equipment of interest.

New Studio Camera

(Continued from page 12)

rather than with a curving motion. The movement is very quiet, even in the present experimental model; in the production models now being built, the movement should be even quieter, as the cam will run in an oil bath.

An unique feature of the Tally camera is the fact that there are no sprockets in the camera itself. These are, instead, placed in the magazine, where, in conjunction with idling rollers, they form an effective light-trap when the magazine is closed, and greatly simplify the threading operation, which, according to Mr. de la Garde, can be performed in 17 seconds. The magazines are further unique in the fact that they open book-wise, with a hinge along the lower edge. The film is easily dropped into place, and threaded around the sprockets and idlers; then the magazine is snapped shut, and becomes perfectly light-tight. To load the camera, the magazine is slid into its place beneath the camera-head; this automatically connects the sprockets to their shafts, and the positively driven feed and take-up spindles to their respective shafts. By means of convenient knurled knobs on the magazine, the sprockets push up enough film to form the loops, and the film is threaded through the aperture and engaged automatically with the pilot pins. A useful safety feature in this connection is that the pilot pins may be locked in their open position for threading, and this automatically locks the entire movement.



Another view of the new camera

The lenses are mounted in the conventional four-lens turret mount, which is hinged and swings forward, giving access to the rear cells of the lenses, and to the 240 degree shutter. The turret may also be completely removed in a minute or less. Focusing is done by moving the entire turret, giving the lenses a movement absolutely perpendicular to the focal plane, and without any rotation. The image is focused through the photographing aperture, upon a ground-glass screen set in a magnifying focusing tube which is dropped into place by a lever at the rear of the camera. A second lever moves the film out of the way, after which the magnifying tube is dropped into position, enabling the cinematographer to focus upon a ground glass, through the regular photographing aperture, and with the lens in actual photographing position, at any time, without moving any part of the camera, or unthreading the film from the movement.

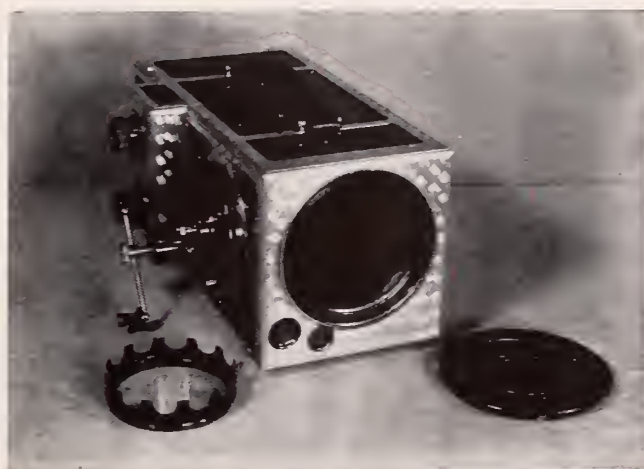
The camera is not regularly fitted with a dissolving shutter, although such can be provided if desired. Provision is also made for the attachment of any type of driving motor that

New B. & H. Lens Eliminates Crane Shots in Professional Movies

THE BELL & HOWELL Company announces a development of first importance to everyone interested in the technical side of professional motion picture making—the new Varo lens.

This totally different lens opens up a wide range of new possibilities and spectacular effects. It makes it possible to "swoop" or "zoom" down on a subject and to recede from it without moving the camera or scene. "Close-ups" can be taken in sound photography work without danger of extraneous noise. "Zooming" scenes from far back to close-up can be taken of actors on a cliff or other inaccessible locations. The new effects that skillful camera men will work out with it are many.

The new Varo lens is set to focus on a definite position and is not focused like the ordinary lens by moving the lens unit nearer to and farther from the film. It is set normally to focus



A view of the new Varo lens

at 150 feet to infinity. Supplementary lenses, screwing into the front of the lens, are available for changing the focus for other distances.

After focusing, various elements in the lens are moved in a synchronized relation, the focal length changing in smooth progression as the position of the elements are shifted. Even though these elements are changed continuously in zooming, the definition is critical at all points.

Shifting is by means of cams designed and cut to an extremely fine degree of accuracy. Since changing the focal length or magnification involves changing the iris continuously to correspond, the iris diaphragm is also operated by a cam at the same time as the lens elements. A locking arrangement and dashpot device in the iris mechanism avoids any possible damage to the iris due to incorrect operation. A "breather" takes care of displacements of air occasioned by moving the lens elements.

The shortest focal length of the Varo is 40 mm. The longest is 120 mm.—a 3x magnification. The range of the lens is 40 to 50 mm. at F 3.5; 40 to 85 mm. at F 4.5; and the complete range of 40 to 120 mm. at F 5.6 and F 8.

Every camera man, every director, every one interested in technical progress in the motion picture field, will be vitally interested in the possibilities of the new Varo lens. This lens will be made on special order only.

the studio or sound system used may require. The production models will likewise afford ample space for the installation of single system recording lamps. For this latter purpose, especially, the camera's built-in tachometer should prove valuable.

Amateur Movie Making

by WILLIAM STULL, A.S.C.

THERE are three definite stages in the production of a professional motion picture: Preparing, Shooting, and Cutting. Each is vitally important to the success of the picture, but perhaps the most important is the first, for if every detail of the production is not carefully and completely prepared for beforehand, not only will there be exasperating and costly delays, but the finished picture will inevitably fall short of being the polished and coherent entity that it should be. The same must likewise hold true for amateur films—particularly for amateur photoplays, or for any such ambitious effort as entries to the American Cinematographer's great Contest. Therefore, amateur filmmakers (whether they intend to enter the contest or not), will do well to take as great pains with the preparatory stages of their productions as they do in the actual shooting.

The exact nature and extent of the pre-photographing preparatory work must, of course, depend upon the type of production, and upon the producer's personal tastes, experience, and facilities. But regardless of all of these, the more painstaking and detailed the preparations, the better the picture will be.

Let us consider the preparation necessary for the filming of an amateur photoplay by a small group. The exact arrangements necessary for other types of film, or for the work of either individuals or large groups can easily be adapted from this.

Organization First!

The first step, of course, is to gather your group together. The group may be a formal club, or merely a group of friends interested in the project of making a picture. The only requirement is that they all be serious about the undertaking, and sufficiently enthusiastic to be willing to put in the necessary hard work—for making a motion picture is the hardest sort of work, even though there is a lot of pleasure mixed in with it. But, consider the group gathered: someone must head it—someone must have the power to make decisions and assign responsibilities. That person had better be the director. He must have the knack of leadership, tact, diplomacy, and the willingness to work twice as hard as any of the rest: for the success of the enterprise will depend upon his ability to work hard, and to make his associates glad to do the same. He must know how to supervise every detail without interfering with the apparent freedom of action of those to whom he has assigned these details.

The first detail is, of course, the selection of a story, and the preparation of a scenario from that story, as outlined in these pages last month. Then come the less obvious—but important—details of organizing for production.

Here is where the responsibility must first be divided. Somebody must be responsible for the photography. The director can do this, but, if there is anyone else who can serve equally well, the director had far better concentrate on his own job, and let him concentrate on the camera work.

Then, somebody must be responsible for the choice of the locations used for making the scenes. These locations must be chosen with an eye to dramatic and photographic suitability, and to accessibility, as well. There is a standing joke among studio people about the producer who, when a director wanted to take his troupe to Yosemite for scenic backgrounds, told him, "A rock is a rock, and a tree is a tree—shoot it in Griffith Park!" It may be funny, but there is a lot of truth in it, none the less. Transporting a producing unit—even an

amateur one—to a distant or inaccessible location costs time, money, and trouble. So if a handier place will serve as well, or can be made to do so by judicious intercutting of long-shots made in one place with closer action shots made in some handier place, it is a good policy to do so. If the picture is to contain interior scenes, these, too, should be chosen by the location man, with an eye to dramatic suitability and to photographic suitability as well. You will want room enough to make long-shots, and to arrange your lighting-units—to say nothing of the proper wiring and current for the lights.

The next step is to make someone responsible for the various properties used. Any object used in a picture—whether it be a Rolls-Royce or a can of fish-worms—is a "prop." Your property-man must know just what is to be used, when, and where—and must be sure to have it available when needed.

The same holds true of the costumes of the players. If the group be large enough, a wardrobe mistress is a real asset, for she (or he, as the case may be) can take the responsibility for seeing that every player is properly costumed, and has the right costumes available for each scene, without forgetting anything. In professional films, where the leading players may have several changes of costume, each change is given a number, and the player is notified just what to have ready each day by number, as, for instance, you will see on a company call board, specifying the sets and players to be used on any given day, "Ann Harding—3—9—11. Leslie Howard—4—7."

If there is much moving around to be done between the locations, someone should arrange the transportation facilities. It is very embarrassing to start the day on one location, then to be faced with a move of several miles—and find you have ten people to move, and only transportation for six.

If the group contains someone with a knowledge of makeup, he should take the responsibility for this. In the studios, even the biggest stars work under the direction of a makeup man, who sees to it that the makeups are properly applied, and that they are all coordinated so that, for instance, the leading lady will not appear with a dark makeup and her leading man with an excessively light one.

Having done all this, these experts must get together, and make a "shooting schedule" or "production breakdown" of the script. In this, the script is carefully studied: the scenes made on each location are listed, the properties, costumes, players, transportation, etc., required for each is tabulated. Thus, when the actual shooting is started, there will be no wasted time or effort. Each person knows where to go, what to have, and when he will be needed. Production can be arranged in such a way that the locations that are near each other can be used in the most effective order. Similarly, if you have one player whose time is for any reason limited, and several whose time is less important, you can film all of the scenes requiring that one player in the minimum possible time, get his or her part of the picture over quickly, and then do the rest of the picture as conveniently and unhurriedly as possible. If necessary, you can use a double in long-shots, and make closer shots of the important player elsewhere, in more convenient locations, taking care, however, to match the background as well as possible. I recall one picture that I made many years ago in which instances of both occurred. I was paying my star several hundred dollars a day—so I arranged my schedule to permit me to get through with her in one day. The rest of the cast was not expensive, so I took several days with them. Unfortunately, one man was injured before he finished his part, so thereafter I re-wrote the script so that I could

(Continued on page 47)



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Hunting Dalli Sheep with a 16 mm. Camera

by V. A. MORGAN

● Mr. Morgan, the author of this article, is an enthusiastic amateur and has entered an extremely interesting picture of sheep hunting in the \$1000.00 Amateur Movie contest which this magazine is now conducting.—The Editor.

SOME people find their pleasure in swimming; some golfing, playing tennis, bridge and in countless other ways. For years I have found mine in hunting and fishing. To me there is no pleasure such as wandering off into the far places away from the haunts of man; to pitch camp in the rugged mountains, heavily timbered with fragrant pine and spruce. In other words, to get away from the clang of trolleys, the shouts of leather-lunged newsboys and the honk of automobile horns. In place of those noises to sit beneath the trees as evening comes and listen to the roar of the wild turkeys as whole flocks swish through the air and finally settle to roost in the nearby treetops; to be awakened in the morning by the gobbling of the head of the turkey house. Or, to sit quietly in the early morning hours and watch the deer drinking at a stream and then at your shout, dash swiftly away into the brush while you chuckle to yourself at their nervousness. If they only knew me they would not run, for I have never yet shot a deer or turkey when I had meat in my camp.

While I have found my pleasure in these hunting expeditions there has always been something lacking to make my pleasure complete. I would return from a hunting or fishing trip and tell my friends of the unusual happenings; of how I stalked a deer, or caught a fish of huge size, only to have some of them call me the world's biggest liar. In fact I had been called a liar so much that I almost began to believe I was one. I always carried a kodak with me, but could not get much pleasure out of taking a picture, for after it was developed and printed you just put it away in an album like putting a man in a nice casket after death—never to see another movement again.

For several years I have hunted the Dalli Sheep in Alaska and up there have seen things that no one would believe in the way of sheep and goats. For example, cornering eighteen goats on a point where they couldn't escape. Then to walk right

in among these wild creatures. Or, of watching five Rams battle on a rocky hillside.

It was after seeing that battle of the Rams a year ago last Fall that I decided that I would get a movie camera and take it with me on all future trips so I could actually show my friends these things. So, when I arrived in Los Angeles last May I walked into a photo supply store and bought a movie camera, telephoto lens, projector and a whole load of film. I rented all the film I could find dealing with the Sheep hunting, but could find none in which there was a closeup of a huge Ram. Then and there I decided that my object in life was to get such a closeup, so my brother John and I started for Alaska again. And it did seem peculiar to me to be going hunting with a movie camera, but I was getting a thrill such as I never had before.

For days we plodded through the wilderness of Alaska, always getting closer and closer to the back country where the huge glaciers are booming and cracking; where the rocky mountain sides are dotted here and there with the beautiful Dalli Sheep. And then came a morning when we finally reached our goal—a spot where only a few men have stepped foot. There we pitched camp and prepared for the hunt. After a hasty breakfast we were ready to start for the hunt. Just then John spotted a huge brown bear. We approached to within thirty yards of him, John with a rifle, I with my camera. He stuck his head over some bushes and I started the camera. He spotted us and started to run. John shot, and Mr. Bear rolled down the hillside, bringing up in some alders down below.

We needed fresh meat badly, and not caring so much for bear meat, we happily found a young, fat goat. Fresh goat steaks were soon ours, and were they good? It started to rain, and for three days kept it up. But we were dry and well fed, thanks to the goat.

Then came the start of the hunt for the Dalli Ram. We kept to the bottom of a canyon, watching the pinnacle for sheep. Soon we spotted a ewe with two lambs. The ewe climbed onto a big boulder and stared down at us with the

(Continued on page 37)



On the trail amid the glaciers



Two of the elusive Dalli Sheep



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THAT SHINE *and*
STARS *that* MERELY
TWINKLE



Perfect pictures now and twenty years from now . . . that's the goal! Otherwise why bother at all?

Victor 16 mm. equipments are designed and constructed to assure far finer than average results . . . clear, sharp exposures with all the quality of studio productions, and projection that rivals the brilliancy and professional excellence of the finest theatrical showings. Besides that, there are the many conveniences and refinements that only Victor provides . . . such, for instance, as **positive film protection** which insure that the priceless shots

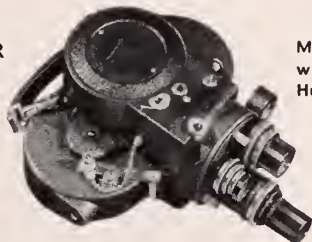
made today will still be good for showing twenty years from now.

Don't envy the chap whose movies "shine out" from the rest—Own a VICTOR yourself! If your dealer hasn't a VICTOR stock, have him write.

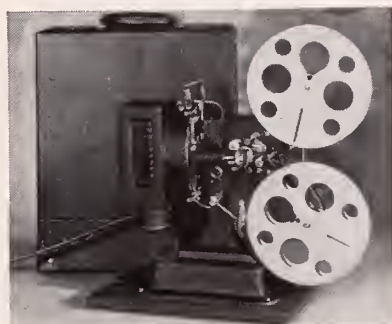
Manufactured by VICTOR ANIMATOGRAPH CORPORATION
Davenport, Iowa

Distributed by NATIONAL THEATRE SUPPLY COMPANY
Branches in All Principal Cities

Ask your DEALER
to Demonstrate
A VICTOR

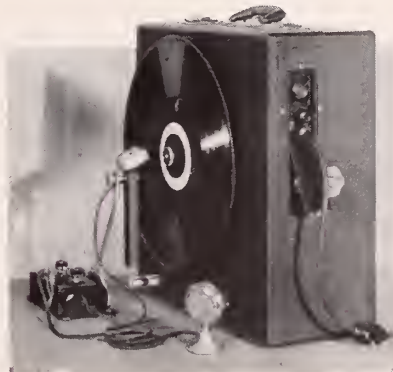


Model 5 Camera
with 1" F 2.9
Hugo Meyer Lens
\$220



Model 7 Projector with 300 Watt Lamp,
all accessories, and Carrying Case \$175

Animatophone complete with Carrying
Case and with 5 Tube Cine Speaker \$500



RCA Presents 16-mm. Sound-on-Film Projector

ANNOUNCED as the culmination of four years of intensive development and heralded as the most advanced step in the field of sound reproduction since the motion picture screen became articulate, RCA Photophone, Inc. and the RCA Victor Company, at a preview and demonstration before an invited audience on January 21st, introduced a new all AC operated 16 mm. sound-on-film motion picture projector.

Manufactured by the RCA Victor Company at its plant in Camden, N. J., and referred to as the RCA Photophone Junior Portable to distinguish it from the 35 mm. Senior Portable which has been on the market for more than a year, the new machine gave rather an amazing performance when its own dimensions and the dimensions of the slender thread of film used are taken into consideration. With the projector placed about thirty feet distant from the screen and the loud-speaker behind the screen, a picture about 4 feet by 6 feet in dimensions and sound of excellent quality were reproduced with remarkable fidelity. Industrial leaders, educators, ministers and others who previously had been privileged to witness the demonstration of the new apparatus, are said to have been enthused over its possibilities in their respective fields of endeavor.

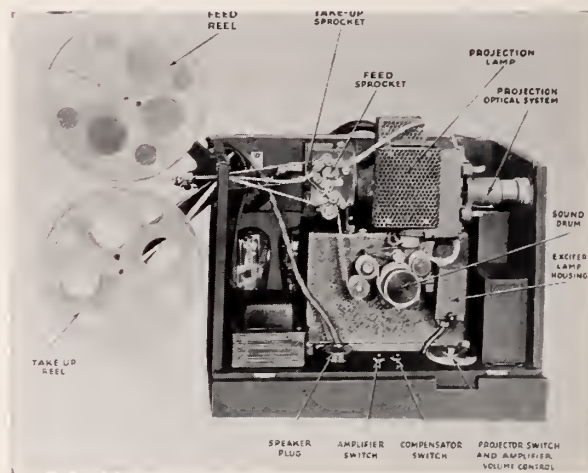
The RCA Photophone Junior Portable equipment consists of a projector-amplifier unit and a small loudspeaker unit. The entire equipment is operated from any 110 volt, 50 or 60 cycle AC lighting circuit.

The projector-amplifier unit is 14½ inches long, 13¼ inches high, 8¼ inches wide and weighs 43 pounds. The equipment is not removed from its case during operation, the interior mechanism being readily accessible for such adjustments of the projector, replacement of radiotrons, lamps and photocells as may be required. During the actual presentation of sound pictures, the case is closed to reduce to a minimum extraneous noise caused by the operation of the projector mechanism. The projector is equipped with an optical system which projects pictures varying in size from 22 inches wide to 16 inches high at a distance of from 10 feet; to 67 inches wide by 50 inches high at a distance of 30 feet. The picture size recommended for good illumination is 52 inches wide by 39 inches high. This size is obtained at a projection distance of 23 feet.

The exciter lamp is a 4 volt, .75 ampere, Mazda lamp and the radiotrons used in the amplifier are one UX-868 photocell, one UY-224, one UY-227, three UX-345s, and one UX-280. All power for the operation of the loudspeaker is obtained from the projection-amplifier unit.

The loudspeaker is mounted in an individual carrying case which is 19 inches long, 16 inches high, 9½ inches wide and weighing 21 pounds exclusive of film cases, film reels and film. Space is provided in the case for the storage of eight film cans for 400 foot film reels. This loudspeaker is of the flat baffle type with the dynamic speaker unit mounted behind the screened opening in the front of its carrying case. A sufficient volume of sound is available to meet the requirements of rooms having a cubic content up to 10,000 feet. The 16 mm. film employed for the reproduction of sound pictures by the Junior Portable contains sprocket holes on one side only instead of both sides as are required by the 35 mm. film. When threaded into the projector, the sprocket holes are on the right side of the film. The sound track, barely discernible to normal sight, is at the left.

"We believe our engineers have produced a sound-on-film motion picture projector that will be heartily welcomed in the educational, industrial and religious field," said Vice-President and General Sales Manager, E. O. Heyl. "Already several large manufacturers of internationally advertised products and a number of educators and others who have been privileged to inspect and witness demonstrations of the new equipment, have manifested unusual interest in it and its possibilities. Leaders in these fields of endeavor, recognizing the value of the sound motion picture for the dissemination of information, have long awaited the introduction of a portable device of proportions comparable to the RCA Photophone Junior Portable and for that reason we announce this development of our engineering organization with considerable pride. The combined weight of both the projector-amplifier unit and the loudspeaker unit makes the apparatus easily transportable. The mechanism of both units being easily accessible, each can be made ready for operation within a very few minutes.



The new RCA 16 mm. Sound-on-Film Projector

"As has been our policy in connection with the distribution of the RCA Photophone 35 mm. Senior Portable, the Junior Portable will be marketed through dealer distribution. The reduction of existing 35 mm. subjects to 16 mm. prints, along with the recording of sound upon 16 mm. negative will make available a tremendous library. Millions of feet of 35 mm. silent pictures will be reduced to 16 mm. subjects within the next few years. Among these are thousands of subjects of particular usefulness to schools, colleges, clubs and churches.

"The introduction of the RCA Photophone Junior Portable makes possible the presentation of sound pictures in places that would be inaccessible to 35 mm. apparatus and it is my opinion that before the arrival of 1933, these new machines will be found in all parts of the world."

Mr. Heyl further announced that factory production of the Junior Portable had begun and that deliveries to dealers will begin within the next thirty days or so.

Hunting Dalli Sheep

(Continued from page 34)

curiosity of a cat. Just then we spotted fifteen more, sneaked up on them and got a fine picture.



The author in the land of the Dalli Sheep

At the head of the canyon we found huge Ram tracks, and we started to climb. A few hundred feet up the mountain side I crawled ahead and peeped over a little bench. There ahead was a huge Ram lying down. I raised the camera and got a few feet of him and then motioned for John to come up as it was a big ram with a splendid spread of horns, a really wonderful trophy. When John arrived and we looked again there were two of them. Laying my camera aside for a moment to put a shell in my gun, imagine my chagrin when the camera started sliding down the snow. I grabbed for it and the rams heard me and started. John fired and got his ram. It was over before I could retrieve my camera. The ram's horns measured 15½ by 34 inches curl by 22 inches wide at the base.

Next morning we started out again. We were scaling the pinnacles when we ran right into a monster ram. He was lying on the lea side of the wind and we walked right onto him before he saw us. In his excitement he dashed over a steep bank. We looked over and there he was cornered in a pocket, impossible for him to get out, except by taking a sheer drop over a cliff of about three hundred feet. I pulled up the camera and we both got into action. He dashed straight at us and came to within five feet of us before he turned back. I certainly took pictures of that boy as he posed in all angles, never more than twelve feet from me. And then my film in the camera ran out. I pulled out another roll, but I was so excited that I never did get the roll threaded, no sir! So I dropped the camera and shot him. A beautiful head. Horns with base of 14½ inches and curl 37 inches by 16 wide. I was happy, for I had my ram and, more important, I had that closeup that I went after.

Two days later we were out of the snow and on the way back. Going through the heavy timber we came upon a baby moose about two or three weeks old. I started to take pictures, and he did not seem to mind, letting me get to within five feet of him for closeups.

And now I am back in California again, but am preparing for another trip to Alaska with the camera. Never will I be without that camera again. While writing this I stopped and put my film on the projector and lived the trip over again. and I laughed as I realized that those friends of mine now lose the pleasure of calling me a liar, for I just take them into the house and let them see for themselves. I feel that, after hunting half my life I have to start all over again, for a hunt without your moving picture camera is like living in the days when we used coal oil lamps.

Camera With Auto Now

THE MOTION PICTURE camera as an automobile accessory made its debut at the New York Automobile Show—with something of a flourish. A gold-plated Cine-Kodak, with a case built into the back of the front seat, was part of the equipment of the Duesenberg Special on display.

The movie camera is a late model compact amateur instrument covered with the light tan leather in which the Duesenberg is upholstered, and with all exposed metal parts gold plated.

The purchaser of the Duesenberg Special will always be able to "Cine-Kodak as you go," for his movie camera will be ready at hand when he is motoring. The built-in case contains room also for several extra rolls of film. Many of the scenes most desirable for personal movies are encountered in motoring.

The gold-plated Cine-Kodak contains enough "narrow gauge" film, at one loading, to make movies that will run for four minutes on the screen. It has finders that permit it to be sighted either at eye level like a rifle or at waist level, dependent on convenience. The lens is a "fast" one, and a push button operating the camera at half speed goes still further in permitting motion pictures to be made when light is not abundant.



Camera Robots

MOTION picture cameras have become robot actors in the fullest sense of the word.

At Paramount studios is a department that bears mute evidence to the animation of the motion picture camera. Here are kept the dozens of different-sized, trailer-like perambulators on which cameras are mounted.

Several miles of wooden tracks on which these "dollies" ride are stored there for use. A camera crane which consists of a camera platform at the end of a thirty-foot steel boom mounted on a universal joint is another piece of equipment.

The "dollies" are of many sizes and shapes, from two feet wide for going through doors to regulation automobile gauge. Some of them are three-wheeled and others four; some are electrically propelled and others are pushed by men. Several of them have telescoping tripods by which the camera can be raised or lowered while moving.



S.M.P.E. to Washington

THE SOCIETY of Motion Picture Engineers will hold its Spring Meeting in Washington, D. C., May 9-12, according to an announcement made by the Board of Governors of the Society. Washington was selected by the Board of Governors following a majority vote for this city by the membership.

W. C. Kunzmann, Chairman of the Convention Committee, and O. M. Glunt, Chairman of the Papers Committee, will prepare the program of arrangements for the meeting which will be held during the height of the Washington Bi-Centennial activities.

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ANNOUNCING . . . TWO EQUIPMENT PRIZES

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AMERICAN CINEMATOGRAPHER

\$1000.00

Amateur Movie Contest

The AMERICAN CINEMATOGRAPHER takes pleasure in announcing to all Amateurs that the BELL & HOWELL COMPANY offers two attractive prizes to be awarded to the winners of the Amateur Movie Making Contest now being conducted by this magazine, and which is fully explained on the opposite page.

Bell & Howell's first prize will be the choice of a **FILMO 70 DA Camera** with the standard 1'F3.5 focusing mount lens, complete with carrying case, and which sells for \$280.00, or a **FILMO Model JL Projector**, with carrying case, which sells for \$298.00. The B. & H. second prize is a choice of any **Standard Cooke Telephoto Lenses**, ranging in price from \$60.00 to \$95.00.



The FILMO 70 DA Camera



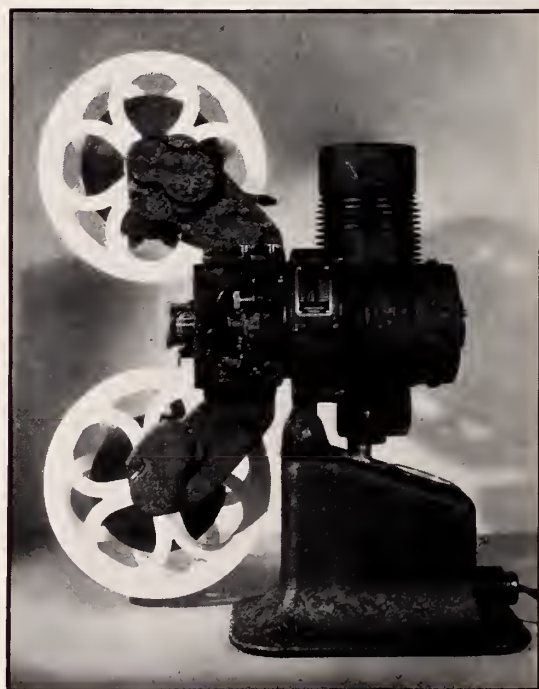
The Cooke Telephoto Lens

These Bell & Howell prizes are to be awarded to those winners of the cash prizes **who have made their pictures with a FILMO camera.** For example, if the winner of the \$500.00 first prize given by the AMERICAN CINEMATOGRAPHER made his picture with a FILMO camera he has his choice of either the FILMO 70 DA camera or the FILMO Model JL Projector in addition to the cash prize. If the second cash prize winner is the highest one with a FILMO camera, he gets the B. & H. first award. In brief, the B. & H. awards go to the first and second highest, respectively, who win AMERICAN CINEMATOGRAPHER prize with film photographed with a FILMO camera.

THE CASH PRIZES ARE

First Prize, \$500.00
Third Prize, \$150.00

Second Prize, \$250.00
Fourth Prize, \$100.00



The FILMO Model JL Projector

Per piacere menzionare il Cinematographer quando scrivendo al annunziare.

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. ¶ A total of **\$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry :: :: :: :: :: ::

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of \$500.00 for what its judges consider the best 16 millimeter picture submitted in this contest. \$250.00 will be given as second prize; \$150.00 as third prize; and \$100.00 as fourth prize, a total of \$1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after

the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9 millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg., Hollywood, Calif.

Enclosed please find Check, or Money Order, for \$3.00 (\$4.00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year:

Name.....

Address.....

It is understood that this subscription makes me eligible to enter your \$1000.00 Amateur Movie Contest.

A New Portable Recording System

OUTSTANDING in the sound field developments this month is the announcement by the Optix Laboratories, Ltd., of a new portable recording system using a special Debie "Parvo" camera built in the Debie factory in France especially for the new sound recorder.

Bearings in this camera are all oversize; gears and sprockets are ground to very close tolerances and celeron and steel helical gears are used. A new "one hole" oiling system is employed. Provision of a quick change mount enables the mounting of large fast lenses. One focusing bar scale suffices for lenses of any focal length. All lens settings may be read from the rear

employed together with a new film movement and modulating system. The variable density system using a new recording light is employed.

The microphone is a special high gain unit made especially for the system. The unit is very compact allowing it to be placed close to the subject without being picked up by the camera.

A licensed Loftin-White high gain amplifier is used together with a new modulator of compact design. The complete amplifier, modulator and recording compartment are housed in an aluminum alloy casting directly under the camera. The box is 10½ inches long, 6 inches wide and 4½ inches high and contains all the amplifier components, control switches and meters.



Concerning Cinematography

(Continued from page 23)

tions is the obvious staginess of the mountain sequence immediately before the climax of the film, and this is the fault of the scenic department rather than of either director or cinematographer.

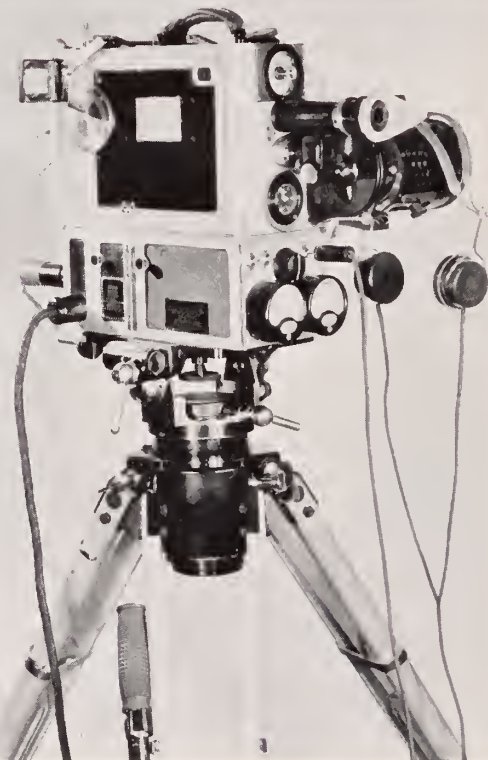
Both dramatically and cinematographically, the picture should end with the destruction of the monster and the death of its creator: the so-called happy ending that was tacked on after this should certainly be eliminated.

THE RAINBOW TRAIL

◆ Another noteworthy picture—though of a wholly different genre—is "The Rainbow Trail," photographed by Daniel B. Clark, A.S.C., who has carved out for himself an unique niche as the premier photographer of outdoor dramas. His exteriors are models of their kind, not alone in composition and pictorial quality, but in their avoidance of overcorrection. Much of the action was photographed in and around the Grand Canyon, and in these sequences Clark has obtained some of the finest shots of this location yet screened. His interior lightings are likewise unusually interesting, for he has used highly dramatic, low-key effects seldom seen in Western pictures. They are highly appropriate here, for the story is far less the conventional "Western" than it is a gangster plot played against a western background.

Good as it is, however, Clark's photography would have been greatly improved had the print been made on tinted-base positive stock. Almost any type of picture will be benefited by the judicious use of colored stock; but outdoor films demand it. There is no aid to either dramatic or pictorial effect that is nearly so potent as this. Most cinematographers, directors, and executives recognize this fact, I believe, the only dissentients are the sound engineers. So, even though there are available several varieties of tinted-base positive which were formulated specifically for sound-films, lamentably few films use them. Probably it can be proven that even these improved tints interfere somewhat with the sound, but I doubt if it can be proven that they interfere sufficiently to be perceptible to anyone but a trained sound engineer. At any rate, the visual gain accruing from the intelligent use of tinted stock is more than sufficient to offset any slight aural loss that might occur. I have personally seen and heard many tinted-base trailers in which the sound quality was quite equal to that of the release-prints of the same pictures, made on plain or argent stock. The pictorial and dramatic values given the scenes by the tinted stock were noticeably superior to the values of the same scenes when printed on uncolored film. It is high time that the sound experts realized that at the box-office, visual perfection is more important than aural perfection. Modern recording and reproduction technique and equipment are very nearly perfect; perfect enough, certainly to allow us the use of so important a pictorial and dramatic adjunct as tinted stock. If any sound man doubt this, let him consider that "In Old Arizona," one of the first and most successful talking films, was largely printed on tinted-base stock, which lent a world of

(Continued on page 44)



The new portable

of the camera. Provision is made for mattes in two places. Pressure rollers in gate. A precision speed indicator is mounted in the rear of the camera and is driven by a shaft mounting two mechanical universal joints. Standard Debie 400 foot magazines are used. The new focusing tube is self closing. A two inch F.2.7 Zeiss lens in Debie Universal mount, two magazines, a folding rewinder and crank are supplied with the equipment. Shutter openings are adjusted from the front of the camera and from the outside. This special camera may be used as an ordinary silent camera by removing the bolt and the stripper and placing the plate supplied in the film slit at the bottom of the camera. The camera is made for sound recording and special insulation is used throughout. The 110 volt D. C. motor runs from "B" Batteries. An ingenious resistor wound around the motor frame allows the operator to control the speed and set the sensitive tachometer at exactly 24 pictures per second. The switch, release and reverse mechanism is integral with the motor. The complete unit may be removed by releasing one thumb screw.

The system of recording used in this new equipment was designed by Len H. Roos, A.S.C., F.R.P.S. A new quartz slit is

Bell & Howell Co. Issues Catalog of 16 mm. Sound Pictures

A COMPREHENSIVE catalog of 16 mm. sound pictures available through the Filmo Library has just been issued by the Library Division of the Bell & Howell Co. Approximately 500 subjects are listed.

Many persons will be surprised to learn that so large a number of such sound films are available. The fact that producers have been so prompt in putting so great a volume of these sound releases on the market in the comparatively short time since 16 mm. talkie reproducing equipment was first perfected is an unquestionable indication of the great importance they are attributing to the 16 mm. sound field. Like everyone else who is observant and alert with regard to such matters, they evidently see sound as an increasingly important factor in 16 mm. pictures.

The subjects listed in the catalog cover a wide range. Many are strictly of an entertainment nature, while others are educational and informative. The listing will, therefore, be of interest not only to the users of sound equipment in the home, but to many others also, including educators everywhere. Many business concerns will find here excellent material to serve as a sort of appetizer in conjunction with their industrial sound picture presentations.

All subjects listed are sound on disc. A copy of the catalog, consisting of 33 mimeographed pages bound in an attractive cover, will be sent on request to anyone who sends eight cents in stamps to defray postage charges. Requests should be addressed to Library Division, Bell & Howell Co., 1801 Larchmont Ave., Chicago.



Dallmeyer Optical-Bench Titling Outfit

J. H. DALLMEYER of London has brought out a practical titling device for the use of the amateur movie maker, and one which should become quite popular with the 16 millimeter users. It is an instrument of real precision, and the user should be able to secure excellent results. The titling device follows the lines of the optical bench, being made of wood instead of steel. The base is about four feet long. On one end the title-board is mounted; on the other the camera. The camera is fastened onto a pedestal which allows for vertical movement and lateral adjustment. The camera can be slid along the board to any spot desired. To illuminate the title a hollow, rectangular frame of metal is placed midway between the camera and title. In this trough are placed eight 60 watt electric bulbs. All in all, it is practical and many things in the way of title making can be done with it.



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for
Cinematographers

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F/3.5, F/4.5

Biotars
F/1.4

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No camera can be better than its lens. And Zeiss Lenses are as perfect as human hands can make them.

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Photo-Era Magazine

WOLFEBORO, NEW HAMPSHIRE, U. S. A.

Pictorialists/ ATTENTION

Three cash prizes will be given for the three best photographs appearing in the pictorial section of this magazine during the twelve issues from October, 1931, to and including September, 1932

**First Prize: \$100.00 Second Prize: \$50.00
Third Prize: \$25.00**

This competition is open to **ANYONE**, amateur or professional

The only requirement is that you must be a bona fide subscriber to the American Cinematographer. If you are not a subscriber, send your subscription and pictorial entry today to

The American Cinematographer

1220 Guaranty Bldg., Hollywood, Calif

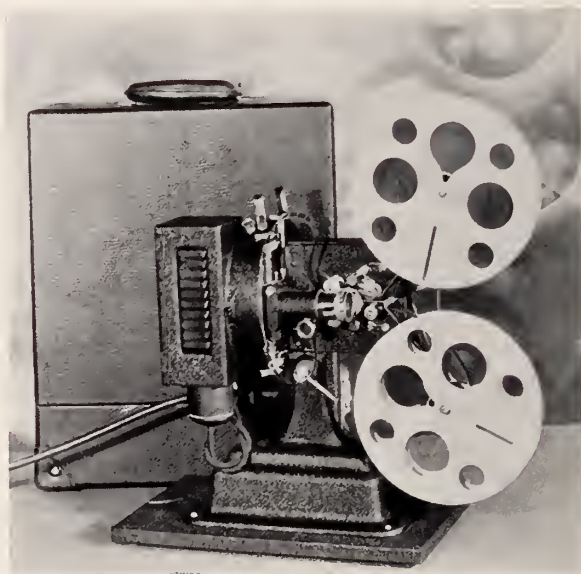
Subscription price, \$3.00 a year. Foreign, \$4.00.

Victor Offers Complete Series of New Model 7 Projectors

VICTOR Animatograph Corporation, Davenport, Iowa, announces that the new model 7 Victor Cine Projector is now available in a complete series which embraces the following equipments:

Model 7 Regular, which is equipped with 300 Watt "No Resistance" Lamp (100-120 Volt).

Model 7G with 50-60 Cycle A. C. Transformer built into base to permit use of high intensity 250 Watt-20V. Lamp. Current may be diverted from Transformer to permit use of 200 and 300 Watt lamps of 100-120 Volts on either Direct or Alternating Current.



The new Victor projector

Model 7R with No. 11 Victor variable resistance Lamp Rheostat mounted with swivel post on projector base. This Model accommodates (on either Alternating or Direct Current) the 250 W.-50V., 375 W.-75V. and 165 W.-30V. high intensity lamps, as well as the regular 100-120 Volt-200 Watt and 300 Watt lamps. It is said to have the widest range of lamp interchangeability of any 16 mm. projector on the market.

Outstanding among the new features claimed for the Model 7 Series of Victor Cine-Projectors is an improved optical system which affords much better illumination, regardless of the type of lamp used. The Model 7 Regular which employs the new 300 Watt lamp is said to set a new standard of illumination for 16 mm. projectors that are not equipped with some form of lamp resistance.

A wider speed range and more quiet operation are other improvements.

The Model 7 Regular and the Model 7G are equipped with the attractive rectangular base which previously was supplied only on the Model 3G. The Model 7R has the pedestal base to permit swinging the rheostat in under the projector body when placing the machine in its carrying case.

The well known exclusive Victor features such as the adjustable shutter which is a constant safeguard against "jumpy" pictures, the automatic film trip which affords protection against film damage and other equally important refinements are all embodied in the Model 7 Series.

Wholesale distribution of Victor Projectors is through the Wholesale Division of National Theatre Supply Company which has factory service sales branches in all principal cities of the U. S. A.

Universal Beginning Busiest Portion of Production Season

ALTHOUGH a bulk of the feature films to be released on the 1931-32 schedule have been completed, Universal studios plan to start the busiest portion of the current production season this month and Carl Laemmle, Jr., general manager, is beginning to establish the nucleus of the next year's program, according to official studio announcement.

Carl Laemmle, veteran president of Universal, declares there will be no "shut down" at Universal City at any time this year and that while the budget for forthcoming production has not been completed that there is a good probability that more money will go toward actual production this year, than last.

"There will be no stinting in current Universal production. The past year has forced all producers to practice rigid economy but this action has given us more dollars to put into pictures—into settings, into direction and casts, into preparation. There is no market for the million dollar film today but Universal will arrange its budgets to supply everything necessary to make consistently better pictures.

"Universal is in the midst of its greatest year of achievement," says Mr. Laemmle. "We have produced some of the outstanding 'hit' films of the year and shown improvement in each succeeding picture. After such a high standard has been established we will not permit anything to hamper even greater advancement, and we look to 1932 to be a real happy and prosperous new year."

Among the stories slated for early production at Universal City are Fannie Hurst's "Back Street," adapted by Gladys Lehman and to be directed by John M. Stahl; "Brown of Culver," an original story by George Greene and E. A. Patterson; "Night Club" (tentative title) by Pincus J. Wolfson and Allen Rivkin, to be directed by Hobart Henley with Mae Clarke, Boris Karloff, Russell Hopton; "Radio Patrol" (by the authors of 'Night Club') to be directed by Edward Cahn; "The Old Dark House" by J. P. Priestley and directed by James Whale with Boris Karloff featured; "The Invisible Man" by H. G. Wells; "Laughing Boy" by Oliver La Farge and starring Lew Ayres; "Cohens and Kellys in Hollywood" by Howard J. Green, directed by John Francis Dillon with George Sidney and Charlie Murray co-starred; "Marriage Interlude" by Luigi Pirandello with screen play by Winifred Dunn.

The Shutter

(Continued from page 10)

Cameramen have welcomed the perfection of this method, but it seems to be a fact that mechanical dissolves, when pre-determined upon, give better effects under the immediate control of the cameraman, which is especially the case with lap dissolves, the character of which certainly suffers under the chemical process, by the necessary use of dupe negatives and the vicissitudes of laboratory work, not under direct control of the cameraman.

This short study of shutter characteristics of only the camera shutter, indicates again the necessity of well chosen compromises between the interrelating characteristics and final effects of persistence of vision, exposure time, relationship of relative value of "open" and "closed" shutter, lens and emulsion speed, illumination and filter values, etc. and it is again up to the cinematographer, his experience, knowledge and ability of often instantaneous best decision to make the best use of this apparently so simple a device as the shutter.

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Concerning Cinematography

(Continued from page 40)

charm and warmth to the fine camera work of Arthur Edeson, A.S.C., while detracting little, if anything, from the sound, even though neither sound technique nor equipment was nearly so perfect as today.

PRIVATE LIVES

◆ Polished comedy—perfectly matched by Ray Binger's deft cinematography. Both dramatically and physically this comedy moves along at a smart clip, with which the camera-work never for a moment interferes. There is no reason for camera-movements to accelerate the tempo of this picture, and director and cinematographer have wisely refrained from employing more than the few that are cinematically necessary.

Technically-minded observers might glean an idea of the tribulations of a cinematographer's private life from this picture, for in the middle of the picture the star was somehow allowed to change her hairdress and—putting a new burden upon the cameraman, for the changes had to be compensated by changes in the lighting. The earlier sets likewise must have been troublesome, for they afford insufficient contrast to Miss Shearer's costumes. The later sets were much more photogenic, and Binger has taken full advantage of all their possibilities. The process work is excellent, though there is one miniature which could stand much improvement. The print is quite up to M-G-M's fine standard.

THIS RECKLESS AGE

◆ This film is a most unpretentious program opus, but it is none the less a notable achievement, for, despite the fact that practically all of the action takes place on one very ordinary set, the audience is never conscious of the fact. The credit for this must be divided between Henry Sharp, A.S.C., Director Frank Tuttle, and a cast bristling with excellent troupers. Sharp, to my mind, deserves the lion's share, for he has handled the very ordinary subject-matter given him in so deft a manner that there is no trace of either monotony or mechanics.

MANHATTAN PARADE

◆ Similarly, the combination of the first really good Technicolor print seen in years and Dev Jennings' fine camerawork make "Manhattan Parade" a much more important film than it would otherwise be. If all color camerawork had been as good as this, and all Technicolor release-printing as well-defined and uniform, the later color-craze would never have subsided. The picture is entirely a triumph of the technicians.

A PREDICTION

◆ I have recently been privileged to see part of a German-made film, "Birge in Flammen," which Carl Laemmle purchased before its completion and is preparing to complete at Universal City. Even in its fragmentary form, it is a superb cinematographic achievement. The camera work is distinctive and the direction enthralling. Despite the dialogue—of which there is fortunately little—"Mountains In Flame" is a true motion picture. Why is it, I wonder, that most American directors seem to have forgotten, since sound came, how to make the real motion pictures that they formerly excelled in, while European directors—particularly German ones—have not only remembered how to do so, but caught the knack of using dialogue without interrupting the flow of cinematic motion?

At any rate, if "Mountains In Flame" is finished as it has been begun, it will be a superb film. And the cinematographer who is assigned the task of completing it will have to rise to spectacular heights if he matches the magnificent photography of the German-made portion of the film. All success to him, and to Carl Laemmle for his enterprise in securing such a masterpiece!

Photographing Vocal Cords

(Continued from page 11)

With a straight quartz rod 8 mm. in diameter in contact with the bulb of a 6 volt, 18 ampere ribbon filament lamp operated at 2900 degrees K., we were able to obtain about 250 visual foot candles on a plane about 90 mm. from the rod end. It was necessary to bend the rod in two places in order to conduct the light from the source to the laryngeal cavity. The first bend was necessary in order to make the rod run parallel to the tube where the two entered the mouth. The position of the camera relative to the end of the instrument makes it impossible to place the lamphouse in a more advantageous position. The first bend amounted to a total deflection of 55 degrees. Fortunately it was possible to make this bend with a circular arc such that the critical angle for quartz was always exceeded and there was no light loss at the bend. The other angle which turns the light downward at the back of the throat was necessarily so sharp a bend that some of the reflected rays were incident at an angle less than the critical angle. A light loss of about 70 per cent was the result. Silvering of this elbow did not improve the efficiency of the rod.

In order to obtain sufficient intensity for motion photography of the cords it was necessary to overload* the lamp for the short period of taking.

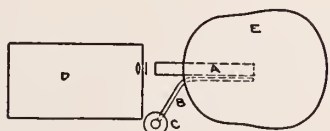


Fig. 4

Figure 4 is a diagrammatic top view of the camera, D; Fonofaryngoskop, A; quartz rod, B; light source, C; and subject's head, E.

Undoubtedly much more can be learned from these preliminary pictures through frame to frame inspection than is possible by projection at 16 frames per second. In a relatively short time of actual picture taking we have thus far gathered results which will furnish material for months of painstaking research before the information to be gleaned will be exhausted.

Teachers of speech or voice and of the deaf, surgeons and physicians, phoneticians, and other speech and voice investigators may be benefited by the results obtained from motion pictures of the laryngeal cavity. To mention a thing of perhaps small importance: The doctor who instructs his patient with the time-honored phrase, "Now open your mouth and say 'Ah,'" may be interested to know that this procedure results in the complete closure of the laryngeal cavity, whereas i ("ee" in peep) opens it wide.

*NOTE: An increase of one ampere in the current consumption of this lamp is approximately equivalent to a doubling of the photographic intensity. The filament can be overloaded to 22 amperes for short times without burning out.

*Tuttle, C., and Morrison, C. A.: Some Preliminary Experiments in Medical Photography, Communication No. 375, *Sci. Abr. Pub.*, 13:114, 1929.

M.P.T.O. of Wisconsin Names Committee Heads

M. P.T.O. OF WISCONSIN committee chairmen for the current year have been announced by Fred S. Meyer, president of the organization. Martin Thomas, Braumart theatre, Iron Mountain, Mich., is chairman of the finance committee; A. C. Berkholtz, Mermac, West Bend, membership; George Fischer, Milwaukee, affairs; A. C. Gutenberg, Grand, Milwaukee, advisory and A. D. Kvoel, Fox-Midwestco, legislative.

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Scientists Claim A New Color Process

C. A. PIERARD, bacteriologist of the Wellington, New Zealand, public hospital, F. S. Cooze and O. A. Townsend, cinematographers, claim they have developed after five years of experimenting, a new, better and cheaper process of photographing in color. The cost of the process they say is but little more than that for black and white, both negatives and positives being made on ordinary film stock, single coated. Scenes are photographed in the ordinary way, the colors being obtained in the developing of the negative. Sound track, it is said, is not affected by the process. A public company to exploit the invention has been formed under the name of Tru-Color Film, Ltd.

Automatic Light Shade For Printing Machine

AN AUTOMATIC light shade for use with printing machines in film laboratories has been placed on the market by the Oehler Machine Co., Inc., of Astoria, L. I., manufacturers of equipment for film laboratories.

The device, which is novel in construction, is said to incorporate a means of controlling the exposure intensity of the printing lamp.

An Apertureless Optical System

(Continued from page 14)

The most unique and important of all advantages is the fact that the light beam is perfectly uniform in intensity throughout its length. As will be evident from Fig. 3, this result is achieved because the horizontal image of the filament, which is composed of the coil elements, is focused on the objective O and consequently cannot possibly be in focus on the film. Furthermore, each coil element is drawn out by the positive lens P and is focused by the objective lens O upon the film, making a complete light beam in itself. It is the sum total of all such elements added together on the same line that makes the fine, clear, brilliant image obtained.

This uniformity of light across the image makes a finer reproduction especially in the case of variable width recording, where variations in brilliance along the slit cause volume or harmonic distortions for which it is impossible to compensate.

Printed through courtesy of the S.M.P.E. Journal.

Laboratory Department

(Continued from page 28)

concentrically located with respect to the one driving a second disc at a lower angular velocity. A slot of relatively small angular dimensions in the larger and slower moving disc serves as a selector shutter, thus isolating the exposures due to a single revolution of the faster moving disc which operates at an angular speed thirty-two times as great as that of the slower. The slower moving disc is picked up by means of a suitable clutch mechanism which causes it to make exactly one revolution. The exposure scale obtained with this instrument consists of 23 steps having a maximum exposure time of 0.512 second and a minimum exposure time of .00025 second.

The United States Bureau of Standards has also constructed a sensitometer of the one-turn sector wheel type. This is a machine designed to work over a wide range of exposure times. In this instrument the sector wheel runs continuously at a predetermined speed calculated to give the desired exposure times, depending upon the sensitivity of the material being tested. The exposure intervals due to a single revolution of the wheel are automatically isolated by a selector shutter which is operated by means of a commutator attached to the shaft on which is mounted the exposure time modulating shutter.

Amateur Movie Making

(Continued from page 32)

manage without him by using a double, and making only long-shots, or such closer shots of him as only showed his back, or hands, or feet.

By this time, you will have your schedule broken down and tabulated something like this: Old Mill: 1-2-4-7-9-15-20-21-22-40.

John Smith: Costume No. 1. Fishing-rod, creel, hip-boots, pipe. Betty Jones: Costume No. 3. Bathing-suit, bag, vanity-case. Props: John's Packard, Betty's Ford, several live fish. Transportation: for John, Betty, Director, cameraman, Prop man, wardrobe mistress, assistants, etc. Camera equipment and props.

Ready to leave Director's home 9:00 A. M.

Betty's Home: 3-5-6-8-10-11. Betty Jones: Costume No. 1. Vanity case. Bathing suit in bag. Mr. Jones: Costume No. 1. Ready to work at 1:30 P. M. Butler. Ready to work at 1:30 P. M. Props: telephone, Betty's Ford, newspaper. Have lighting equipment ready at house. Transportation: none. Ready to work after lunch on completion of Mill sequence.

And so on until every scene, every player, prop and costume and every working moment is provided for. Only as this preparatory work is done completely and perfectly will you be able to produce your picture smoothly and efficiently, and free from unforeseen and troublesome delays. You may not be faced, as a studio is, with an overhead expense of thousands of dollars per day, but you want a good picture—and you can only get one when every detail is carefully planned before hand so that no one will be working under a strain, or subjected to needless irritation.

Arrived at this point, with your story ready, and your preparations complete, you are ready to start actual production. But that, as Kipling says, is another story.

Tom Mix Rides Again

(Continued from page 13)

the opportunity of photographing nature's wonders which far surpass anything that can be created within the confines of a studio's walls. There is nothing quite so inspiring as to leave behind all the earmarks of civilization and plunge into the mountains where the solitude is broken only by the song of a bird or the cry of a wild animal. And that is what you get with Mix.

"I am pleased to be with him again, for I know what Mix wants, having worked with him for so long. Which brings up a point that I think should be stressed in picture production. I think that producers make a mistake when they change cinematographers so frequently in the making of a star's pictures. A cameraman after one or two pictures knows just what to do and what not to do to bring out the best in that star photographically. After he has acquired that knowledge, doesn't it seem foolish to put a strange man in his place?"

"The same holds good in the case of cameraman and director. After one picture a cameraman learns just what the director wants. The director has discovered just what that cameraman can do for him in the way of assistance. Then the studios usually give the director a new cameraman who has no idea of what the director demands. It would seem to be more efficient to keep working combinations together."

Incidentally, Clark has probably photographed more western locations than any other cameraman in the profession, and he has an almost uncanny knowledge of locations. Show him a script calling for any particular type of location and Clark will tell you just where it can be found. He has made a study of locations throughout the west and has an unusual collection of location stills. Students of exterior photography would do well to watch for the first Mix picture and see how Clark combines scenic beauty with fast action.

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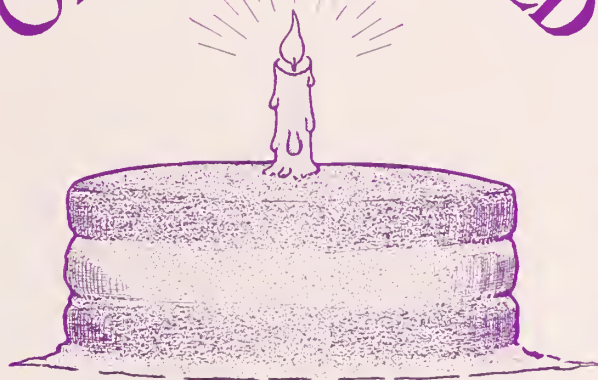
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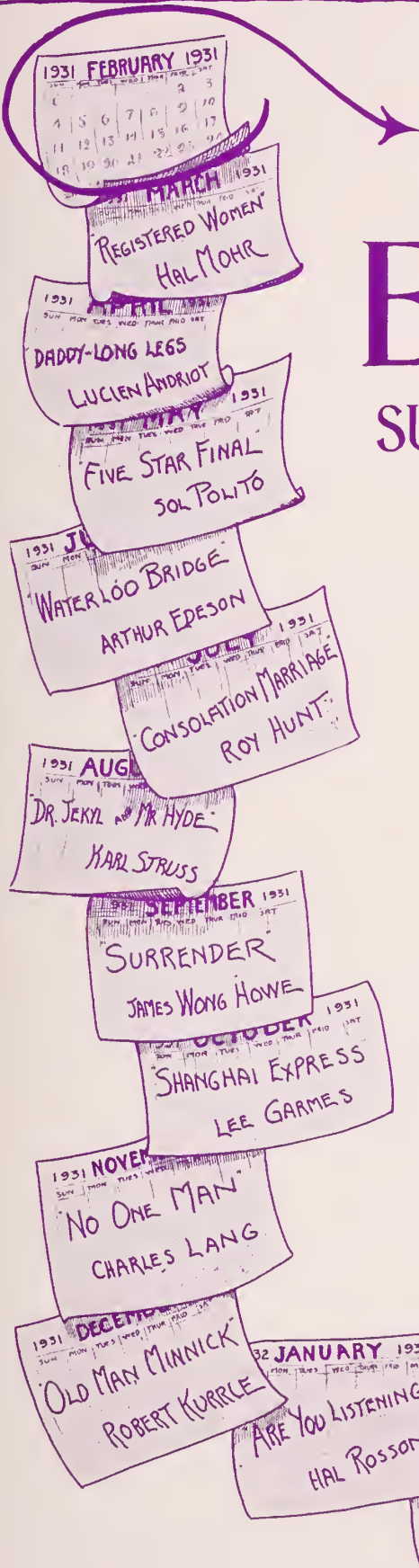
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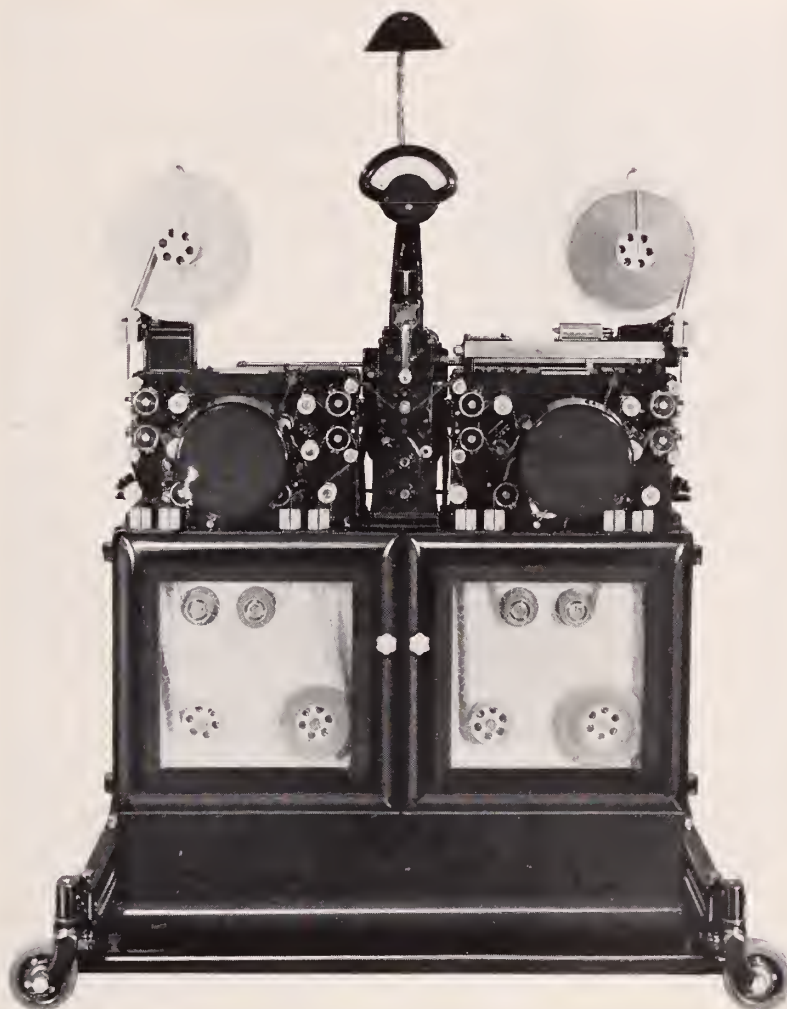
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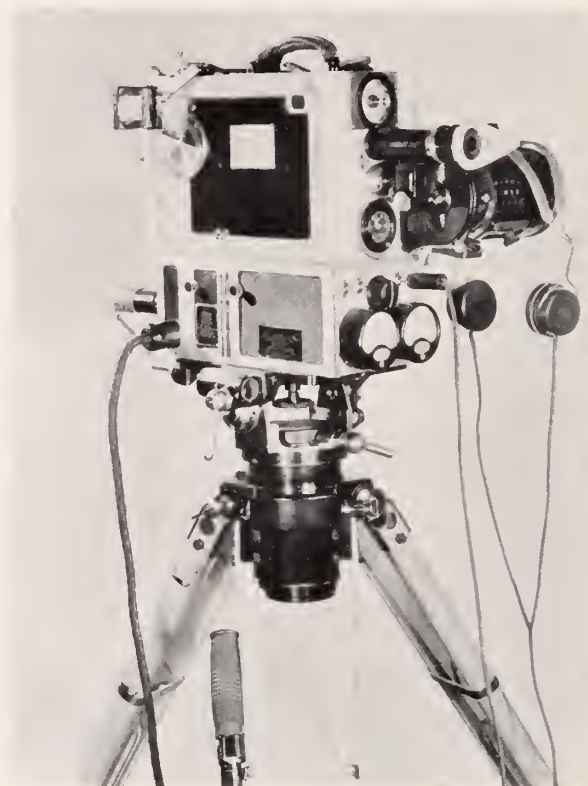
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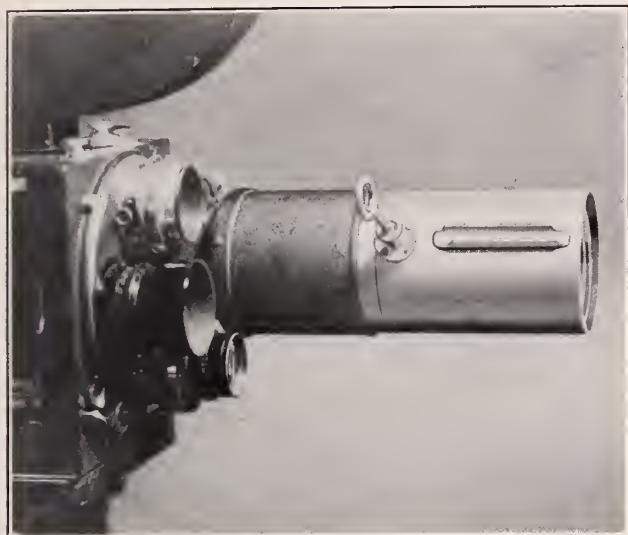
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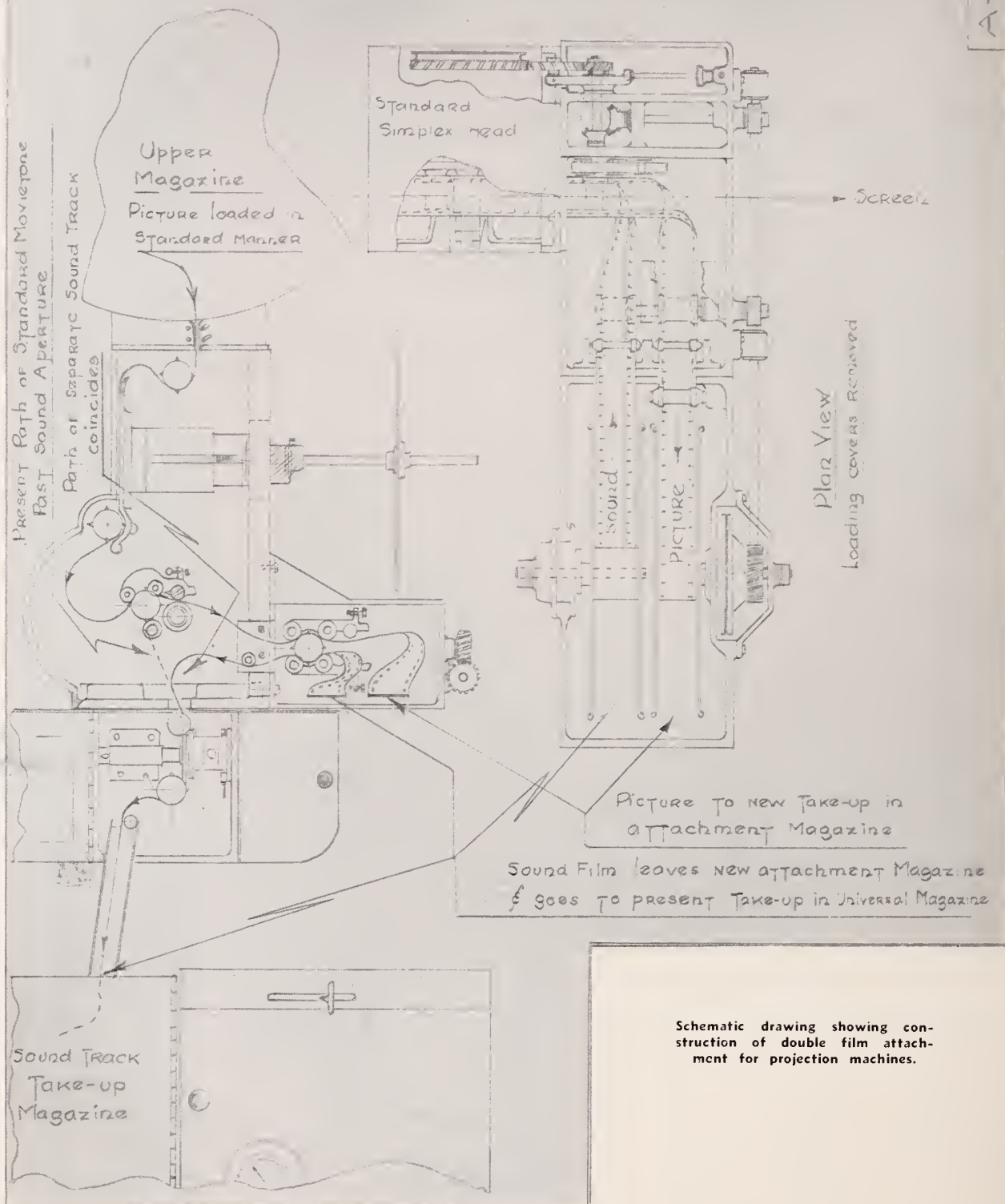
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Schematic drawing showing construction of double film attachment for projection machines.

Double Film Attachment for Projection Machines

by **WESLEY C. MILLER**

THE USE of separate film for picture and sound has thus far proven to be the best method for studio production work. With certain exceptions, the major studios are using this plan even though it is somewhat less economical to use than if a single film were used. Thus far, at least, the increased film cost is over-shadowed by the greater flexibility of the double-film method in editorial handling.

The use of the two films has, however, presented a big problem in projection. The first solution found was the application of an entirely separate sound reproducing machine running synchronously with the picture projector,—thus a reproducing machine for each film. This has produced excellent results but has the disadvantage of requiring additional expensive machinery-maintenance and space-requirements in projection rooms in the studios.

Quite recently, several designs have appeared of units which may be attached directly to a standard picture and sound reproducing machine, to enable both films to be run on a single machine. The immediate application of these attachments is for preview work where it is desired to project a double film version of a production in a theatre which has facilities for a normal single film program only.

The accompany illustrations show one of these attachments designed and constructed by the Metro-Goldwyn-Mayer organization for this purpose. The attachment consists of a light casting mounted on a plate which replaces the front plate of a standard projector. This casting houses certain sprockets, and provides a mounting for two additional magazines. The full picture reel is placed in the upper picture magazine, and the picture film is threaded through the projector in the usual manner, except that instead of it being taken into the regular takeup magazine below, it passes out into the new attachment and into a takeup reel mounted in the latter. The full reel of sound film is mounted in the attachment, and is threaded out through it and down through the regular sound reproducing mechanism and into the lower takeup magazine of the projector.

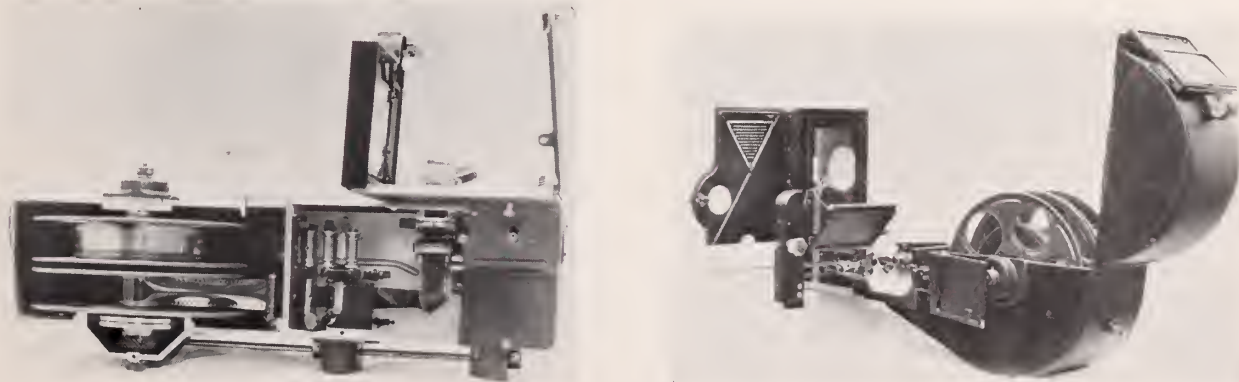
Briefly, the attachment provides a takeup magazine for the picture, and a feed magazine for sound; but picture is projected and sound is reproduced in the standard machine exactly as it would be in the case of a single film. The transfer from the

standard machine to the attachment occurs just below the intermittent movement for picture; and just above the sound aperture for sound. In both cases, suitable loops are maintained, which so far as the standard machine are concerned, are practically identical with those which are obtained with single film operation.

The whole attachment is mounted on a plate which replaces the front plate of the projector. In installing it, the projector front plate is removed and this new plate, which is part of the attachment, is mounted instead. A gear mounted on the attachment plate, and provided with suitable adjustments, meshes with the main driving gear at the back of the projector, and provides the driving power for the sprockets and the takeup magazine on the attachment. The entire operation of mounting the attachment, including removal of the projector front plate, is a matter of five or six minutes. In an emergency, the change can be made between reels.

Suitable door arrangements are provided on the attachment, so that with film running it is entirely enclosed, but the film is visible through glass windows. The doors are readily opened for inspection purposes, or to permit of threading film. The threading operation is simple, involving merely threading over two additional sprockets. It has been found by experience that but one-half to one minute more is required to thread both films in the machine with the attachment than to thread a single film in the regular machine in the usual manner. Thus, the attachment imposes no hardship upon the operator, and offers no time hazard in preparing the machine for the next reel in the limited time usually available.

The two original models of this attachment were placed in use in a production projection room in the studios for several weeks before sending them out for preview purposes. The immediate reaction of the operators was that they would rather have these attachments than to use a reproducing dummy in connection with the projector. In addition, in the entire test period, not one case of film breakage occurred which could in any way be attributed to the use of the attachment. With this record behind them, the machines were put into preview use and have been uniformly satisfactory for that purpose in every case.



Two views of double film attachment described by Mr. Miller

Talking Pictures in India

by **WILFORD E. DEMING**

Executive Manager, The Radio Installation Company

WITH one exception, I have been privileged to be the only American directly connected with the Indian Film Industry, and under my supervision was produced India's first sound and talking picture.

In November of 1930 I established my first contact with India, and as an engineer enjoyed a most interesting working comparison of the picture industry as it is today, and as it was fifteen years ago, a comparative technical and operative space of time as represented by the Indian producer; and, as an executive, experienced the opportunity of moulding an organization and forming a pattern for a watching industry as a whole, passing the transition period from silent to sound with an attempt to eliminate many of the faults brought to light during our like period in Hollywood.

This first sound and dialogue picture swept all of India like wild fire, eclipsing by more than ten times the greatest silent picture gross and sailing from India for the second time, I have just received a radiogram "TOLLYWOOD SENDS BEST WISHES HAPPY NEW YEAR TO LUBILL FILM DOING WONDERFULLY RECORDS BROKEN", which reports my latest release which opened on the night of sailing.

In passing it might be explained that our Calcutta studio was located in the suburb of Tollygunge Tolly being a proper name, and Gunge meaning locality. After studying the advantages of HOLLYGUNGE we decided on TOLLYWOOD. There being two studios at present in that locality, and several more projected, the name seems appropriate.

During the fall of 1930, the possibility of producing sound pictures was first entertained by one of the leading producers of Bombay, and arrangements completed for recording equipment. To Mr. Edmund Hansen I owe the greatest debt of gratitude. To him was made the request for the recommendation of an engineer to proceed to India for the purpose of preliminary installation and instruction. I sailed from

Los Angeles Harbor on what promised at least an interesting 'round the world trip, little expecting the momentous events which followed. Knowing nothing of Indian producers or production methods, no advance plans were made.

My arrival in Bombay and my subsequent period of life amidst the luxuries of the east showered upon me shall ever be remembered. Royal suites servants cars all were mine! Never lived such a potentate! But above all, the opportunity to achieve was freely and fully given, and every facility made available.

A survey of Indian producing methods provided quite a shock, and quite antedated my experience in motion pictures, extending over eight years. Film was being successfully exposed in light that would result in blank film at home, stages consisted of flimsy uprights supporting a glass or cloth roof or covering. The French DeBrie camera, with a few Bell & Howell and German makes, completed the list of photographic equipment. Throughout, the blindest groping for fundamental facts was evident. The laboratory processing methods with sound in view were most distressing, and obviously the greatest problem. Even today, this problem exists, though the past year has seen acceptable progress. Satisfactory prints have always been most difficult to achieve.

After exposure, the film is wound on racks holding about 150 feet, and at this point roughly broken with a loss of as much as two frames. These racks are then developed and passed thru the successive stages of processing, in flat tanks into which ice is placed and added, in a sufficient quantity to bring down the temperature to 65 degrees in a surrounding temperature of 90 or more with humidity exceeding 90%. Naturally the ice melts rapidly, diluting the solution of the bath, so that in the processing of any given magazine of film, it is impossible to expect constant densities over any appreciable length. This is of paramount importance where sound recording is to be considered. Furthermore, few standards of cleanliness have ever been considered, and flicker-



Left to right: Amar Mullick, B. N. Sircar, head of New Theatres, Ltd.; Wm. Howard, American Commercial Attache; W. E. Deming, M-G-M representative and I. A. Hafesjee

ing, scratched film was accepted as normal. Marks on the negative from racks and drying drums and ordinary bubbles in the emulsion, caused by the racks of film being splashed about in the flat tanks, were immediate problems to be corrected before attempting production of sound pictures. Disregard for "unnecessary" improvements premeates the industry, and the feeling often expressed that "Anything is good enough for the Indian Public" provided further elements for combat.

In the rooms designated for editing and splicing there was at least evidence of progress in the shape of a waxing machine and an automatic splicer but both lay in dusty corners, covered by rust. Slicing went on thru the means of six or eight men squatting in the midst of a floor full of film the utter disregard of fire danger was surprising, negative being totally unprotected during all stages of preparation joining by means of tongue and scissors. With the tongue the emulsion end was wet, then scraped with the scissor's blade, cement applied, and the splice held together until dry. Obviously not "production" methods, but with the low cost of labor each splicer probably receiving the equivalent of 15c a day many hands turn out the work of a few machines.

We in California are familiar with the Mexican expression of "Manana" tomorrow. "Manana" is a very poor example of the Indian custom of apparently earnestly accepting an instruction invariably resulting in "Yes Sir, I'm JUST doing it", though the order may have been given days or weeks past.



New Theatre's Studio under construction at Calcutta

A complete assembly of Mole-Richardson lights, easily the pride of a Hollywood Independent, was provided, but experience proved that all but the requisites for flat lighting were superfluous. Artists among Indian Cinematographers are very few.

Hollywood may feel a painful condition of too much "family" in studio organizations but India far surpasses in this evil. Simply a family connection is sufficient to place one as a director or cameraman. Unhappily this is mirrored in Indian films. Unless very closely associated, it is impossible for a Westerner to appreciate this condition of the Eastern society, where a transgression leads to ostracism from family or caste ranks. So closely are Indian organizations built around these family or friendship ties, that a serious order or correction is seldom given for fear of offending, and instructions are received with always the apparent reservation of execution when and where it may please the individual.

It was in this maelstrom of strange circumstances that I found myself, and from these foundations it has been my privilege to build.

Upon the completion of India's first sound picture, I returned to America in order to take full advantage of the opportunities so apparent in this just awakening country,



Left to right; Production Manager C. Bose; Director Kapur and Chief Cinematographer Nittin Bose on the set during shooting of "Gule Bakuli" at Calcutta

planning a quick return. Bombay had for long been the principal producing center of India, but Calcutta, the second city of the British Empire, had been awakened by the great financial success of Bombay's first talking picture, and eagerly awaited the opportunity of entering the field.

During the home visit, I signed a permanent contract, and Mrs. Deming and I sailed for a world honeymoon, with Calcutta as the immediate destination.

Calcutta provided a complete surprise contrasting the rushing, haphazard methods of Bombay. Here I was presented with the nucleus of what has become a real production unit. Formed by several of Calcutta's leading citizens who had wisely surrounded themselves with competent assistants, well financed and with an ambitious program of producing pictures for India actually comparable to those of the independent Hollywood companies, this company was building on a firm foundation.

Awaiting my final instructions for completion, was a spacious steel, brick and concrete structure housing the sound stage and laboratory. Not only was every modern convenience added to this lot, including rehearsal halls, dressing rooms, showers and chemical sanitary system, dining room, power plant, extensive garages and a large, well equipped carpenter shop, but the entire lot has been landscaped, lawns, trees and hedges being laid out, and a grass tennis court constructed.

A complete air conditioning plant supplies the laboratory, and though a machine developer is expected soon, double vertical tanks are now used for all baths during processing. In this manner, ice is only added as necessary to the outer tank, and there is no dilution of the bath.



Action shot during shooting of "Shakuntala" at Calcutta

Large rooms, especially protected against dust, and heated or cooled as necessary, house drying drums, electrically driven, in contrast to the usual Indian method of hand turning.

The latest Bell & Howell automatic continuous printer is in use, and cutting and editing facilities are completely modern, with machine splicers and Moviola equipment.

"RICO" studio sound recording equipment, mounted in a Ford truck, together with DeBrie and High speed Bell & Howell Cameras, and a very complete set of Mole-Richardson lights complete the equipment.

The sound stage, approximately 60 by 150 feet in size, is well sound-damped, and free from external disturbance to a remarkable degree. We have worked in the midst of very strong thunder storms with no ill effects, and cars continually move about the lot.

During the first month of operation, in the midst of heavy Monsoon rains and terribly high humidity, a bit of trouble was experienced with noisy microphones, though no actual days were lost, several retakes were necessary, always obvious at the time of action. Dynamic microphones seem the only answer to all year operation in India.

Following the completion of satisfactory tests, two pictures were produced, the first in the Bengali language for Calcutta and North Eastern distribution, and the second in Urdu for general release. During November and a part of December, the studio was rented under very satisfactory business arrangements, to a Bombay producer, who made two pictures, both in Urdu.

Widely varying languages over the whole of India present some problem, though a majority of the profitable release centers may be reached by Urdu or Hindi. Even story values vary greatly in different sections.

Scripts are very frequently prepared from Arabian Nights' tales, with a few original adaptations. Almost universally, the tragic ending is preferred with the happy climax in heaven and strange and various are the conceptions with double and triple exposures abounding.

Like Hollywood, in their first sound pictures, India forgot the art of MOTION PICTURES, and I well remember my efforts to please by cramming "some sound" into every foot of my first picture. But today, the Indian director is making motion pictures WITH sound, of a vastly improved overall character.

One interesting phase of Indian work is the complete indifference with which the microphone is received. Remembering our trouble from "Mike Fright," and realizing the limitations of illiteracy in India, I expected a great amount of difficulty which never materialized. In five pictures that I have supervised, there have been practically no retakes necessary because of the addition of dialogue.

Financially, the Indian film industry is rather strangely aligned. There are few individual companies adequately financed. Rather, there will exist a company foundation, and after a script is prepared, finances for this particular production will be obtained, and the picture and company property pledged as security. Often, individual directors will obtain financial assistance, and by renting the use of some studio property and equipment, produce a picture. Production costs are usually quite low, averaging, all costs included for operating a fairly modern sound studio, 15,000 to 20,000 Rupees per picture with a gross of normally 85,000 to 100,000 Rupees for a Urdu production, with an all-India release. Due to being "tied" to the depreciated British Pound, the Rupee is today worth about 25c, the normal value being 36c. It is easy to speak in large production figures in India and still not spend much money.

There are very few contract players, officials or technicians. Unfortunately, the industry is not sufficiently stable to carry a large overhead over an extended period of indefinite conditions. The leads of an average picture will receive as high

as 500 Rupees a month \$125, but usually 200 to 300 is a closer estimate. In almost all cases, artists are hired on a picture to picture basis. Extras often surprisingly hard to find, may receive a Rupee or so a day for their services.

Bombay, having for long provided most of the cinema offerings, is better prepared for casting than Calcutta. Two of the pictures I made in Calcutta were with almost exclusively inexperienced people, due to the difficulty of obtaining suitable Urdu speaking leads. Often, due to illiteracy, lines must be individually taught the actor or actress, and on one or two occasions, lines were read from a blackboard.

In one year, India has progressed very rapidly, and the future, barring unfortunate internal problems, appears optimistic. Individually, studios are attempting to better their standards but collectively, the state of "Dog eat Dog" pretty generally exists. It is often the practice of more powerful companies to rush to completion the same picture a competitor may be producing, and under the present Indian law, there seems no protection available. Inter-company rivalry is far too bitter to make a producer's organization possible.



A sound truck in India

During my last few weeks in India, while temporarily acting as editor of India's film weekly, "Varieties," I formulated the plan and assisted in organizing the Calcutta Branch of a technician's society, modeled on the SMPE. Under the name of The Society of Indian Film Technicians, this organization shows promise of becoming a national power, and it is hoped, will do much toward building and regulating the industry. There is a great necessity for breaking down the barriers of individual jealousy among representative technicians, and such a society will go far in aiding all involved.

There is a great need and demand for technical books and magazines dealing with the film industry in all of its branches. I can confidently report that THE AMERICAN CINEMATOGRAPHER as a magazine, is the ONLY such periodical accepted in the Indian studio, and each copy is a treasure jealously passed among the favored friends of the subscriber. The 1930 CINEMATOGRAPHIC ANNUAL has been since its publication India's FILM BIBLE, and is everywhere accepted as the final authority. All technicians are eagerly awaiting Volume 2, the new 1931 edition.

In conclusion a few words regarding the people with whom I have worked and the country.

London edited news articles would paint a picture of Hindu and Mohammedan at each other's throats with Parsi and Sikk dipping their hands in the blood of both Brahmin and Untouchable, hard at it in the other corner.

(Continued on page 31)

Progress

by **JOHN ARNOLD**

President, American Society of Cinematographers

THE statement is frequently made, of late, that the progress of cinematography has far outstripped that of the other artistic and technical phases of motion pictures. This statement is not made alone by technical or semi-technical writers, but by the writers of the lay press. Coming from such a source, and at a time when all of the other phases of film-making are admittedly reaching such high levels of perfection, this is a compliment of which every member of the camera profession may well be proud.

It is a source of great gratification to this writer that the American Society of Cinematographers and its individual members have been able to do so much in bringing about this progress. Cinematography itself is unique in that it is both an art and a science and cinematographers are likewise unique in that they are at once artists, technicians, and researchers. For they not only utilize the developments which constantly emerge from the laboratories of the film and equipment manufacturers (laboratories which are, incidentally, in many cases directed by A.S.C. members), but they carry on a greater or lesser degree of independent practical research themselves. This experimentation often entails considerable expenditures of money, time, and labor. These expenditures are willingly made by the various cinematographers concerned, despite the pressure of their work, and the prevailing world-wide depression. I do not know of a single cinematographer who does not constantly carry out such research, not only when he is employed, but between pictures. Many of them maintain considerable equipment solely for this purpose; some of them even have complete miniature studios and laboratories.

In addition, the American Society of Cinematographers, through its various research, educational and production committees, as well as through special committees and through collective experiments by the membership as a whole, is constantly engaged in research on the various practical problems affecting cinematography. Not only does it experiment with new materials and equipment, but it constantly strives toward the general betterment of the industry.

During the past half-decade, there have been innumerable examples of this. Some of them have received international publicity, others have been known to only those directly affected. One of the Society's earliest achievements was in connection with the introduction of panchromatic film and incandescent lighting. It was, it will be recalled, an A.S.C. member, Ned van Buren, who first dared to photograph an important production entirely upon the then new and untried panchromatic film. Following this came many individual and collective experiments which resulted in the universal adoption of that type of emulsion. Not long after, it was again the A.S.C. which pioneered the use of incandescent illumination, both individually, and in the famous Mazda Marathon which was conducted by the A.S.C. with the cooperation of Warner Brothers Studios and the Academy of Motion Picture Arts and Sciences. As a result, practically every studio is today on a 100 per cent incandescent basis.

Again, with the introduction of sound, it was again A.S.C. men who photographed the first talking pictures, and A.S.C. members, especially Douglas Shearer and Roy Pomeroy, who made outstanding contributions to the new science of sound-film recording. It was, too, largely through the individual and collective efforts of the Society and its members that the camera regained its mobility, which had been lost through the use of booths. And the contributions of other members to the

development of practical portable recording outfits is too well known to need repetition.

The research conducted by the Society during the short-lived wide-film craze, though less publicized, was no less exhaustive and valuable, as it was practically the sole complete, industry-wide survey of the problem ever made. When and if the wide film idea is revived, as it undoubtedly will be, the work of that committee will undoubtedly furnish a basis for the industry's final action on the problem.

More recently, the Society's experiments with the new super panchromatic emulsions generically termed "Fast Film," hastened the industry's complete adoption of these films, and are too well known to need detailed repetition.

Since then, the Society's study of the problem of obtaining better quality in release-prints, though it is even yet far from complete, has materially bettered the industry's release-prints, and awakened the producers, distributors and exhibitors of the country to the vital need of better and more uniform release-prints.

Most recently, the society's consideration of the grave economic crisis confronting the industry today, as embodied in this writer's recent message to the industry, has aided in bringing about a more thoughtful and disinterested consideration of the problem by all concerned.

But these things tell only half of the story. They do not begin to cover the vast deal of patient individual research and experimentation conducted by individual cinematographers. This work, though unheralded, extends to every phase of cinematography. Despite the fact that it is so little known, it has been the foundation for much of the astounding progress of cinematography. It has touched the artistic and the technical sides of camerawork, and ranged from the intricate problems of lens and camera design and trick cinematography to simpler questions of lighting, filtering and even camera-maintenance.

The results, however, are vividly apparent upon the screens of countless theatres. Practically every picture released contains action which could not have been photographed even a short two years ago. Two outstanding examples of this come to mind: "Hell Divers" and "Strangers in Love." Neither of these productions could have been made in its present form even a year ago. Today, we accept them without question, and without thought for the achievements of the cinematographers whose researches into process photography made them possible.

But, great as it is, the progress made thus far in the art and technique of cinematography is but a small thing compared with what is to come. Cinematography is going to outstrip even its previous amazing progress; and the American Society of Cinematographers and its individual members will inevitably be in the forefront of this development. We have done much already, and established glorious traditions; but we are bound now not only to live up to these traditions, but to establish newer and more glorious ones.



Costuming and Cinematography

by **GUY S. DUTY**

Chief Costume-designer, Fox Studio.

IT MAY perhaps seem trite to repeat that the motion picture is primarily a visual art; but the fact remains that such is the case. Since the cinema is then essentially visual, it follows that it offers unbounded opportunities to cinematographer, set-designer and costumer. In return, it demands the most complete cooperation between these three artists—a cooperation which is, unfortunately, all too frequently lacking. And until this cooperation not only comes into being, but becomes a thoroughly established routine—a rule rather than an exception—the visual side of the cinema cannot become the complete artistic unity that it can and should be.

Under the present system, the sets are designed quite independently of the costumes, and the cinematographer is expected to come on the set unprepared and photograph the two so that they are artistically and dramatically satisfactory. Considered individually, the sets are as a rule satisfactory, and so are the costumes; but they are all too often unsatisfactory in combination. That the results on the screen are as good as they are is a lasting tribute to the artistry and technical skill of the cinematographers. It reflects little credit upon those of us whose duty it is to supply them with sets and costumes which are not only artistic individually, but thoroughly photographic in combination.



Right, design by Mr. Duty for costume to be worn by Joan Bennett in "Widow's Might." At left the costume as worn by Miss Bennett



Undoubtedly much of the blame for this situation lies with the present methods of production. Studio overhead has reached an appalling figure, and pictures are accordingly pushed through production in the shortest time possible, and to meet the demands of an inexorable release-date. What time is spent in preparation is devoted largely to the story and dialog, while the physical features—particularly sets, costumes and cinematography—are slighted, often to the point where sets and costumes must be provided literally over night. This gives the architects and costumers little or no time to coordinate their work, and to consult with the cinematographer. Let it be said, however, that the cinematographers are always eager to cooperate; but when a cinematographer is working day and night to complete one production, and the sets and costumes for the next one have just been ordered, and must be ready for use the following morning, the opportunity for such cooperation is small indeed.

The ideal state of affairs would be one which allowed more ample time for thorough coordination of set and costume design for the purpose of securing combinations that were ideal photographically and dramatically. It is well known, of course, that the lighting and composition of each scene must co-ordinate perfectly with the dramatic mood of the action; the same is true of the costumes and sets. They, too, must perfectly fit the action. It is also well known that the visual mood of the photography can heighten the dramatic mood of a scene, and subtly prepare the audience for the action which is to follow. So, too, can the sets and costumes. They can be made to match the mood of any scene, and to aid the cameraman in his efforts to lay a visual foundation that will make the audience psychologically receptive to the action. But to do this, they must be perfectly matched to each other, both visually and photographically, and to the technique of the individual cameraman, as well. Were this done, all three artists would be working to better advantage, for they would be working hand in hand, toward a common goal, with a thorough understanding of both the problem in hand, and the methods to be used in its solution.

Unfortunately, however, the costumer and set-designer get little opportunity to coordinate their ideas. Each reads the script, and visualizes his individual contribution to each scene; then each proceeds to design and fabricate that contribution independently of the other. So we all too frequently get dark costumes to be used on a dark set, and light costumes to be used on a light set; in either case, the sets and costumes are thoroughly satisfactory conceptions individually, but when brought together they place unfair handicaps on the cinematographer, for such combinations do not afford natural tonal contrasts, and force the cameraman to secure his separation of planes and depth entirely by lighting. And when, as is frequently the case, the director has a penchant for playing his



Linda Watkins wearing the costume shown in design at lower left



Costume design made by Mr. Duty for use by Linda Watkins in "Good Sport"

action close to the walls of the set, the cinematographer is faced with utterly impossible problems.

This situation is a bad one, obviously. In the first place, anything that places the cinematographer at a disadvantage is harmful to the production as a whole. Clearly, adding to the difficulty of lighting a scene adds to the time and money that must be expended in photographing the picture. But it strikes closer home than that, for if costumes and sets do not make a perfect photographic combination, neither can be shown to its best advantage. Therefore, to do justice to themselves, as well as to those splendid fellows, the cameramen, we who design the costumes and sets should make greater efforts toward coordinating our work. And as a matter of common business efficiency, production should be so scheduled as to allow more ample time for this cooperation, not only between architect and costumer, but between both of these and the cinematographer, for none of the three can do his best work alone, without a thorough understanding of what the others propose to do.

Considered for itself alone, motion picture costuming offers the designer far greater opportunities for expression than does any other field. He has everything in the world to work with, and his accomplishment need be limited only by his ability and imagination. Within a very short period, his designs may range from current styles to period models of any moment from antiquity to the remote future. The sole restraint imposed upon him is that his work never become stylized. Here, cinema costuming differs most vitally from ordinary fashion-creating: for in the latter case, it is desirable that a designer's creations be recognizable as his, while in pictures the designs must express the individuality of the star, and the mood of the story rather than the individuality of the creator.

(Continued on page 30)

A New Zoom Lens

One of the outstanding features in the camera field during the past month is the announcement by Otto Durholz of Paterson, New Jersey, of a new lens which, according to Mr. Durholz, performs in a spectacular manner. The following description of the lens with an outline of its possibilities has been prepared by Mr. Durholz.—Editor's Note.

THE ARTISTIC and economic advantages of a lens to permit, at will, a variation in image size during takes, has long been recognized. The directorial value of truck, dolly or approach shots in which a gradual transition is made from long shot to close-up or vice versa is such that despite all the additional expense of track sections, trucks, added crew and time lost by extra rehearsals and retakes, the use of this technique has grown to such an extent that there is more than ever a need for a more efficient alternative. Sound productions require a safer procedure unless these shots are taken wild without sound. Even in sound-news work where cumbersome apparatus is not to be thought of, it is of obviously great advantage to vary camera angles without interruption of the sound track, not to mention facilitating set-up for grab shots under pressure. It may seem strange that while camera cranes, tier stackers and the like were acquired to permit such shots from other directions than the horizontal, so little was done in perfecting a simple optical solution of the problem.



The new Zoom Lens

"Unfortunately the problem is not one of which a simple optical solution can be readily found if it shall also be feasible mechanically. A small fortune has been spent and a number of ingenious contrivances built in attempting to effect the required automatic control of the optical systems. There were simple solutions that were inaccurate or unworkable and there were workably accurate ones which were anything but simple.

"All of the essentials of a successful device of this nature do not occur at first thought. Obviously the subject selected must be maintained in maximum focal sharpness on the film during the entire range of the movement. Customary close-ups made with a four inch lens with camera moved up from wide angle position would suggest a variation of about 4x, say from 40 to 160 mm. The lens should accordingly be focusable as close as 8 ft. in order to take a full head close-up, it being understood that initial focussing will not cause loss of focus anywhere during the travel. There must be provision for equalization of effective aperture or a partial fade-out will result. Color and distortion errors must be corrected to compare favorably with single purpose lenses, insofar as the present state of optics permits.

"It is vital that, due to the nature of the optical systems involved, full sunshading be provided at every stage despite the constantly changing angle of view. To give the effect of a smooth approach without the intrusion of the mechanical, irregularities must be eliminated. This requires that the image increase correctly from start to finish, without the cameraman having to change rate of control to make this correction. Not only must the image increase, but the rate must itself increase in accordance with the laws of perspective.

"Mechanically it is essential to save time by the use of the device or its purpose will be defeated. It should be light, rigid, compact and of few, simple, working parts, preferably metal. To attach it to a camera accurately and securely should not take longer than changing an ordinary lens, and it should fit on camera or turret without the use of tools and without interfering with other lenses. Its drive should permit rapid or prolonged "zooming" and be accessible to operator of camera. Auxiliary tripod parts or counterbalancing of friction heads are not desirable.

"Combining the cameraman's point of view with an original scientific study of the basis, my lens has been developed to meet these requirements, and after a year's experience with my own, I am supervising production for the market. Avoiding corrective additions to related mechanisms, a fundamentally new design of striking characteristics has resulted, far different from any apparatus built or patented previously. In fact, although carried about in the Durholz "bag of tricks" on location and news assignments, its resemblance to a telephoto lens served to maintain secrecy without any other disguise.

"This lens snaps over the standard Mitchell type cup mount in a few seconds ready to focus. This may be accomplished by ground glass or scale and from infinity to 3 ft. as simply as with an ordinary lens. No kit of supplementary lenses is needed. Other lenses need not be stripped from the turret. Being under 5 lbs. in weight and less than 11 inches long, it is easily carried about and requires no auxiliary tripod parts nor counterbalancing of friction head.

"From long shot to close-up it maintains focus automatically from 40 to 160 mm. or reverse, in any direction and in any desired footage from 2 ft. upward. For prolonged shifting a crank is provided which slips on the camera sunshade arm. The range is sufficient to begin with a crowd shot of 16 heads and close in on one head, full-screen. With new sound aperture the range may be further extended down to 37 mm. as shown provisionally in illustration. The effective aperture is F 8 at full range, F 5.6 at 3x, increasing as range is limited. An automatic limit to range is provided if iris is opened wider than F 8.

"The rate of image increase is optically corrected without need of changing lever or cranking rate. Practically maximum sun-shading at all focal lengths is automatically provided.

"While the first lens was being given practical tests to discover possible refinements in the lens itself, the process of manufacture was being perfected to reduce the necessarily great expense involved in the manufacture of the one. Other methods of producing the control mechanism having been rejected on account of the human equation, a specially designed focus generating machine was built, thus producing the same accuracy inherent in a lathe or compass for generating circular shapes. The job, however, was far more intricate than producing a true circle. Beside having to cut a working surface that would not need further treatment by hand, the machine

(Continued on page 37)

The Reversible Process

by **DR. W. RAHTS** and **DR. F. O. SCHULZ**

Translated by Dr. Herbert Meyer
Technical Division of Agfa Raw Film Corporation, Hollywood, California

THE reversible process, as known, involves a method, whereby a positive is obtained on the same film that has been used in making the negative. To this end, the film or plate, after being exposed, is first developed in a developer of a special composition, after which the silver grains are dissolved in an acid bleaching bath, containing potassium bichromate, potassium permanganate, or chemicals of similar reaction, and the remaining silver bromide is finally reblacked, either by using a second strong exposure and subsequent development or by directly changing the silver bromide into silver sulphide.

To obtain perfectly clear high lights, a clearing bath is usually applied immediately following the bleaching, which destroys and discolors all traces of the bleaching solution left in the gelatine layer. Thorough washing and rinsing between each operation during the whole process is essential to obtain perfect results.

The first actual and widely used application of this reversible process was made with the so-called color screen plate. It is not possible to successfully superimpose, one over the other, all particles of the same color in a contact printing process due to the irregular distribution of the color grains in the screen of this type of plate.

The consequent result would be that, in printing a color plate negative onto another color plate, the true color rendition would be falsified, due to a decrease in transparency. By use of the reversible process this effect is entirely eliminated. A further practical application of the reversible process covers the field of amateur movie photography.

The characteristics, which make an emulsion suitable for the reversible process, are given as follows:

- (1) The grain must be reduced to a minimum since the projected film is looked at from a far shorter distance than usually maintained in 35 mm. theatre projection;
- (2) A suitable gradation covering all requirements for good projection quality;
- (3) High speed, since the exposure in the camera is limited to approximately $1/35$ of a second, and furthermore since large apertures cannot be used in cases where depth of focus is desirable.

The grain in a print, as is known, is mainly attributable to the fact that the relatively large grains of the negative are printed onto the positive film and thus made visible in the projected print.

Within wide limits, it may be found correct that the speed of the singular silver haloid grains of a given emulsion will be in proportion to their size. That is, that the larger grains are more sensitive to light than the smaller ones. Considering this latter point in its practical importance for the reversible process, we may find the following interesting fact.

In all places, where light strikes the film during the exposure, the high and medium sensitive grains will be affected first, and correspondingly blackened in the first developer, and then dissolved in the bleaching bath. Therefore, only the remaining smaller grains are left, which after the second exposure are redeveloped and thus form the positive picture. This means in the reversible process, that only the smallest grains are left in the high lights and the light shadows, where the human eye is especially sensitive to grain.

In the deeper shadows only a part of the large grains are exposed and removed by the bleaching process. Therefore, the

final positive in these parts will be composed of the remaining large, medium, and small sized grains. These grains, however, although rather large, do not affect the quality of the picture, since the eye is not able to discern the details in the deeper shadows to the same extent that it does in the lighter shaded tones.

In the negative-positive process, the large silver bromide grains will be affected in all parts during the exposure and are developed afterwards; these large grains are then printed in all shades onto the positive film. Therefore, comparing both methods of obtaining a positive picture, the reversible process will give preferred grain quality.

From the foregoing, it will be understood that the reversible emulsion should contain a quantity of sufficiently large grains to fulfill the requirement for high speed and also a sufficient quantity of small grains for the structure of the final positive.

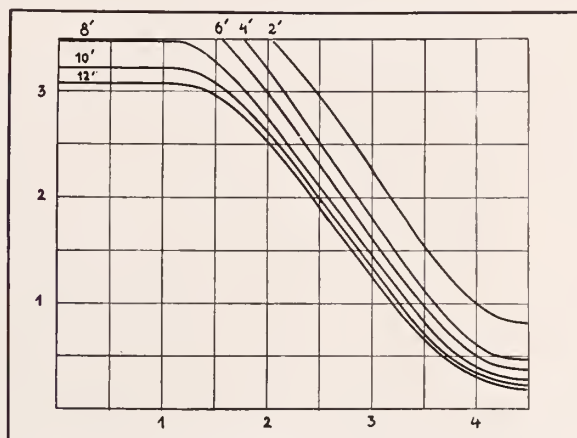


Fig. 1. Agfa reversible film (developed into a positive). Different developing times for first developer without addition of silver bromide dissolvents

An extremely high sensitive emulsion consisting only of large grains will result in weak and flat reversed positives, since there is an absence of sufficiently small grains. On the other hand, a fine grain emulsion like positive film will show good picture quality after reversing but is not sufficiently sensitive.

The resolving power of an emulsion apparently does not become changed to any considerable extent by carrying the film through the reversible process, considering that only the grains actually present during the exposure determine the characteristic of the resolving quality, and it is, therefore, of no importance whether the film is afterwards processed to a negative or to a positive.

Figure 1 gives the sensitometric characteristics of the reversible emulsion developed into a positive. As usual, the log values of exposure on the horizontal axis are plotted against the densities of the vertical axis.

The characteristic curves of negative emulsions rise from left to right, that is, the densities in general increase with increasing values of exposure, while the curves for reversible emulsions are in inverse ratio, the densities decreasing with increasing values of exposure.

(Continued on page 22)

HAL HALL

says

Advice

OF LATE this writer's desk has been swamped with letters from scores of ambitious men who hope to come to Hollywood and "break into" the motion picture industry in various departments. To all we have given the same answer, and we feel that we should say a word on this page about it.

At the present time the motion picture industry is, like most other industries, in the midst of a rather serious situation. The depression has hit the picture business perhaps a bit harder than it has hit many other activities. The result is that there are countless men and women out of work in Hollywood. What chance would a stranger with no experience have under the circumstances? It is a difficult enough task in good times to break into the picture field. But in these times when men with years of picture making experience are unemployed and are willing to take any kind of a job to keep the wolf from the door, the inexperienced stranger has no chance. Coming to Hollywood now with the hope of getting employment in the picture studios will result in nothing but heartaches. If you have a job of any kind, stay where you are, for jobs are more precious than diamonds right now. Don't come to Hollywood and find yourself unable to even return home. This writer's ice man is a college graduate who came here hoping to crash the studio gates. And there are a lot of other college graduates here who would be happy to have an ice wagon route.

The Amateur Contest

IT IS really gratifying to see the large number of Amateurs who are entering pictures in the \$1000.00 Amateur Movie Contest which this magazine is now conducting. From all corners of the Globe the entries are coming in, and it looks now as though next November will see the greatest collection of Amateur films ever brought together when the judges assemble to award the prizes in this contest.

On another page of this magazine there is an announcement of two more additional equipment prizes to be given winners in the contest. One is a Model k Cine Kodak, listed at \$150.00, and offered by the Eastman Kodak Company. Another is a complete Max Factor Make-up Kit, containing everything in the way of make-up that an individual or a club might need. Last month we announced two prizes which will be given by the Bell & Howell Company. They were, first—the choice of a Filmo 70DA Camera, listed at \$280.00 or a Filmo Model J L Projector, listed at \$298.00; second—a choice of any standard Cooke Telephoto Lens, ranging in price from \$60.00 to \$95.00. This makes quite a group of valuable prizes, added to the total of \$1000.00 in cash prizes to be given by this magazine. From month to month other additional prizes will be announced, which should make this contest something really worth "shooting for." Only eight more months remain to get in this contest, and we advise all Amateurs to hurry their entries, and not wait until it is too late to make your picture.

Tell Us

WE OF the magazine wish to be as helpful as possible to our readers. We try from month to month to give you articles that will be both interesting and of value. Letters from our readers seem to indicate that we are giving them

what they want. But we would greatly appreciate more letters telling us just what you would like to see in our pages. If you have problems, write to us and we will attempt to solve them. If you would like to have certain articles, write us and we will do our best to give them to you. In other words, this magazine belongs to our readers—it is your privilege to tell us what you would like to have placed therein. Let us hear from you. Send in your suggestions today.

What! Another Slam!

PITY the poor film industry. It is a wonder that it continues to exist, under the constant bombardment by every nincompoop who wishes to call attention to himself.

And now we find even a United States Senator taking a shot at the film industry at a time when all United States Senators would be doing their country a REAL service by trying to solve the ailments of the country that are throwing hundreds of thousands of men into the unemployed ranks, with the resulting suffering on the part of countless women and children. Senator Brookhart shouts in bull-like tones in the halls of the senate that we should have an investigation of the film industry. Why? Perhaps Mr. Brookhart knows—but we doubt it.

What the motion picture industry needs more than anything else is to be left alone and to be given an opportunity to work out its own problems as it has always done in the past. If the esteemed gentlemen who are in the Congressional and Senatorial Halls will work as industriously to balance the nation's budget as the motion picture executives are working to put the industry back on its financial feet, the country will get along quite well.

This and That

AMONG the Hollywood visitors as we go to press are President J. A. McNabb of the Bell & Howell Company, and Ted Curtis of the Eastman Kodak Company at Rochester . . . Our good friend Eddie Blackburn is one of those whose birthday comes but once every four years—being born on February 29—Congratulations . . . Studios are maintaining more policemen on their lots than it would take to police a good sized city—can't figure just what it is all about, for you can't carry away the heavy equipment used these days . . . Some studios are feeling that a gentleman from the press will not contaminate the lot if he is allowed thereon . . . Studio gatemen are still wearing that "superior air" . . . Ever notice that it is easier to talk to most big executives than it is to see their secretaries? . . . Pictures seem to be getting better . . . Box offices will be busier as a result . . . Wonder why that wasn't thought of long ago? . . . Suggestions for material for Volume 3, Cinematographic Annual, will be greatly appreciated by Ye Editor . . . Weather very "unusual" in California this winter . . . Advertisers are discovering that they get results when they use this magazine . . . It reaches thirty-six foreign countries and is read all over these United States . . . Yes, Sir . . . Intelligent advertising right now will help break the depression.



Shadows

Frank Tanner



Charles G. Clarke, A. S. C.



Arizona Desert

Charles G. Clarke, A. S. C.



Helm

Harry Adams

The Reversible Process

(Continued from page 17)

The brilliancy is not only dependent upon clear high lights but also upon the density of the deepest shadows. In the reversible process no silver is removed at those places which have not been exposed to light, and, therefore, the full amount of silver bromide will be developed in the second developer following the second exposure. The maximum density of the reversed image is mainly dependent upon the thickness of the emulsion layer and upon the content of silver bromide in the emulsion.

If one would use the normal formula for the first development, the maximum density of the reversed image would not be influenced by the developing process itself. However, it is not possible to add to the first developer chemicals which will dissolve silver bromide, as for instance ammonia, hypo, a. o. These chemicals dissolve parts of the silver bromide during the first development. The longer the first developer is applied, the more silver bromide will be dissolved, and the value of the maximum density of the reversed image will be correspondingly decreased.

Figure 1 shows sensitometric curves of reversed film, using a normal formula for the first developer, not containing any chemicals which dissolve silver bromide; while figure 2 shows similar curves of the same emulsion, using the same formula for the first development but with chemicals added to dissolve the silver bromide. It may be seen from the comparison of both figures that the dissolving agent mainly decreases the density of the shadows, while the high lights are only slightly weakened.

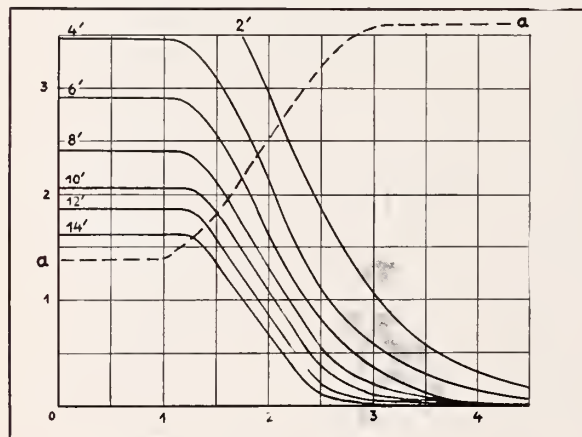


Fig. 2. Agfa reversible film (developed into a positive). Different developing times for first developer with addition of silver bromide dissolvents. A-a negative curve developed for eight minutes in first developer and fixed afterwards.

The developing time with silver bromide dissolvents is decidedly shorter for obtaining the same maximum density. The application of this method makes it possible to reverse emulsions even of a pronounced thickness, and furthermore, as shown in figure 2, to obtain greater tolerance and latitude in the arrangement of the gradation of curves. It is regrettable, however, that it is not possible to make similar negative curves, which would allow the direct observation of the action of the first developer containing silver bromide dissolvents, since the dissolved silver bromide becomes partly reduced, and silver in extremely dispersed form precipitates causing dichroitic fog, thus practically preventing the correct reading of the curves. The curve a-a in figure 2 represents approximately a negative curve, which would be obtained by developing the reversible film for eight minutes in a first developer adding silver bromide dissolvents and fixing out immediately afterwards.

At this point, it has to be mentioned that it is not possible to determine the sensitometric curve of the reversed film by any geometrical construction figured from the negative curve. As shown above, the reversed positive consists of entirely different grains than the negative picture. Since the shape of a curve is determined by the nature and distribution of the grains, the structure of both, the negative and reversible positive curve, must widely differ. If using daylight, instead of artificial light, for the second exposure, one will obtain pictures which are somewhat darker, more flat, and of brownish color, for the reason that the more intensive daylight affects the smallest grains also, which otherwise would not be developed and, therefore, dissolved in the final fixing bath.

The ideal value for the maximum density naturally is dependent upon the intensity of the light source in the projector used. Considering the present types of 16 mm. projectors, a maximum density of 2.3 to 2.6 should prove satisfactory.

To obtain an exact natural reproduction, the gamma value of the reversed curve theoretically would have to equal unit, because this gamma in this process is replacing the product of gamma negative times gamma positive. This would indicate that, taking into consideration a fog value of 0.1 and assuming a maximum density of 2.3, the latitude would cover a range of 2.2 logarithmically or 1:160 numerically. However, it is known that in amateur photography an exact natural reproduction is not desired, but a considerably more brilliant one, and, therefore, all reversible emulsions show a decidedly higher gamma value and correspondingly less latitude.

The ideal rendition of shadows and lights requires a perfectly straight line characteristic for the reversed emulsion, since there is no possibility for compensating the different curvatures of a negative and a positive curve against each other. Unfortunately, this requirement is not taken care of in the present types of reversible emulsions.

An important question is that of the speed of the reversible emulsion. In considering the gradation curve, the speed has to be determined by the value of the log exposure axis, the corresponding density value of which shows a density just clearly distinguishable from the value of the maximum density.

It is comparatively simple to obtain good picture quality using reversible film with correct exposure, and an object, which does not contain too large a difference between lights and shadows. The difficulties start with the problem of adapting the reversible method to largely differing light ranges in an object and by trying to correct over- and under-exposure.

From figure 2, one will notice that by keeping the conditions for reversing constant, a possibility for adaptation in the above sense cannot be expected. The high lights, for instance, have to be clear. Therefore, the highest light value has to be placed by exposure to the point where the curve turns parallel to the log exposure axis in the lower right. Since this is a given condition, it will be evident that the latitude for exposure range is decidedly limited.

(To be continued next month)

◆

New Officers for Cinema Club of San Francisco

THE FOLLOWING officers have been elected by the Cinema Club of San Francisco: President, Fred W. Kolb; Vice-president, Gordon Michie; Secretary-treasurer, Harold McKay; Chairman of Membership Committee, Fred Dohrmann, Jr.; Chairman of Program Committee, H. P. Westler.

The Club has recently opened new quarters at 447 Sutter Street. The following club sections have been formed: Dramatic, 9½ millimeter, Scientific, Technical, Primary and Advanced.

FOR THE FINEST PHOTOGRAPHY OF THE YEAR

EVER since it was announced, Eastman Super-sensitive has maintained its leadership in the negative field. It is especially outstanding when its qualities are enhanced by the gray backing.

This year the biggest motion picture successes, from a photographic standpoint, will be filmed on Gray-backed Eastman Super-sensitive. Familiarize yourself with its use—*now*. The services of the Eastman technical staffs are at your command. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *SUPER-SENSITIVE*
Panchromatic Negative (*Gray-backed*)

Concerning Cinematography

Critical Comments on Current Pictures
by **WILLIAM STULL, A. S. C.**

THIS past month has seen the release of a group of the most magnificently photographed productions ever screened. Each of them represents cinematography in its highest development, and gives indisputable evidence that cinematography has taken its place as one of the great art mediums of the world. Each represents a radically different style of camerawork, but they are so nearly equal in quality that it is all but impossible to name any one of them the best of the month.

"ARROWSMITH"

◆ But since one of them must be chosen as the best, that one should be "Arrowsmith," which was photographed by Ray June, A.S.C., for it is one of the most sincerely and intelligently photographed films of all time. No cinematographer has ever achieved a more valid and sustained mood than has June in his interpretation of the famous Sinclair Lewis story. Without being for a moment obvious, the cinematography tells the story of Martin Arrowsmith's career, following his development from crudity through ambition, futile striving, to partial success and disillusionment and finally a renewed impetus to carry on and conquer. There are broad and crude tones, sparkling contrasts, sombre lower-keys, hectic higher-keys, delicate etchings, vaporous murkiness, and finally the clear-cut lines of renewed vigor.

"Arrowsmith" is, in a word, a picture which every cinematographer and every student of the art of cinematography should study earnestly. It is both an education and an inspiration—the epitome of the cinematographic art.

"MATI HARI"

◆ Scarcely less perfect is "Mata Hari," photographed by William Daniels. It is, perhaps, even more educative, for in it Daniels has employed practically every artistic and technical trick known to cinematographers. Every student—professional or amateur alike—of lighting, composition, cinematics, and cinematography generally, will find a vast deal of benefit in studying "Mata Hari." The amateurs, especially, will find one scene which is played entirely by the voices and cigarette-glow of Greta Garbo and Ramon Novarro interesting, as it shows the potentialities of super-speed film.

"THE BROKEN LULLABY"

◆ This film was originally titled "The Man I Killed," and in it, Victor Milner, A.S.C., has achieved the most distinctive photography of many months. He has united the widely differing German and American schools of cinematography with a most remarkable result. He has almost completely dispensed with backlighting, which is so greatly abused in this country, yet has achieved unusually fine modelling. The keynote of the picture is utter naturalness, yet he has succeeded in maintaining the properly low-keyed mood necessitated by the heavy drama of the story. In a few sequences he has used effect lightings to great advantage without any trace of the obvious.

"AFTER TOMORROW"

◆ Although devoid of spectacular settings and costumes, "After Tomorrow" is a notable piece of cinematography. Story, direction and characterizations all lend themselves ideally to

James Wong Howe's style of cinematography. He has matched the mood of each scene to his photographic quality with rare perfection, and at the same time photographed the players to far better advantage than most of them have previously been treated. The picture does not offer opportunities for the cinematic grandstand play that so often passes for good camerawork, and Howe's camerawork, because of its perfection, is unobtrusive, and yields the spotlight to story and characterization. None the less, it is the photography which psychologically prepares the audience to receive the excellent acting. The scene where William Collier's wife returns to him is notable in this, for the slightly harder visual quality, and the shadow-patterns thrown on the set and upon Collier's face unconsciously prepare the audience for what is to follow.

There is but one major criticism which can be made: this is of a process scene of Charles Farrell and Marian Nixon riding on a bus-top. This scene is an important one, and although Howe's lighting of the foreground action is perfect, the scene suffers from a very poorly photographed background plate. This background plate is very badly out of focus, and unsteady, as well. It is, of course, unnatural to expect such background action to be wiry-sharp, but it is worse to have it so obviously made out of focus as this. Such process backgrounds should be photographed with normal sharpness, to allow the cinematographer who completes the shot to use whatever type and degree of diffusion may be necessary in order to complete the composite scene perfectly.

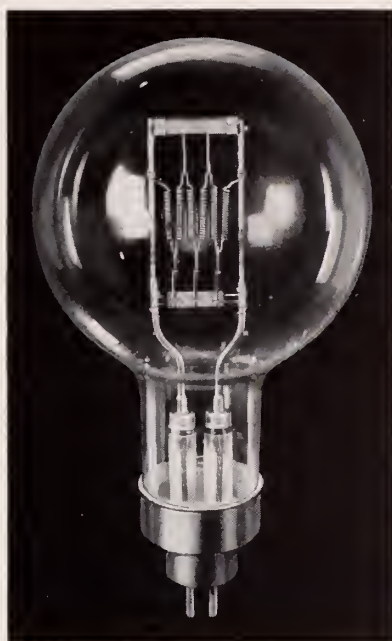
"STEADY COMPANY"

◆ Since returning to this country, Charles Stumar, A.S.C., has not had many opportunities for spectacular cinematic distinction; but his work in "Steady Company" is so fine as to remind us that in Germany his name was often billed above star or director. The picture itself is an unpretentious little program film, and was made, I believe, on a schedule and budget that should class it as a "quickie"; but Stumar's photography, aided by a very human story and sincere portrayals makes it a very worth-while picture. Stumar has photographed the production with a quality that is too frequently missing from specials now-days. His handling of the prize-fight sequences is especially noteworthy, particularly in the dramatic application of camera-angles. Stumar has been assigned the completion of "Mountains In Flame"; in his hands it should become a great picture.

"THE GAY CABALLERO"

◆ Here is another picture that is saved by its photography. This is getting to be a habit with George Schneidermann, A.S.C. In this one, working under the handicaps of bad weather, changes of director, a lackadaisical cast, and the generally disordered conditions recently prevailing on the Fox lot, Schneidermann has turned out a picture which is, photographically at least, always excellent, and at times rather better than that. Despite the bad weather, which necessitated the use of "booster" lights, he has done his best work in the exteriors. The interior sequences would have benefited greatly had he been able to employ more pictorial set-lightings, for the sets were of the Spanish type, and would have lent themselves well to such treatment. The exterior sequences, and particularly the night scenes, would have benefited, too, by the use of tinted-base film.

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8. CITY LIGHTS
9. A FREE SOUL
10. SIN OF MADELONE CLAUDET

Type of Lighting:

PART	MAZDA LAMPS
100%	MAZDA LAMPS
PART	MAZDA LAMPS
PART	MAZDA LAMPS
100%	MAZDA LAMPS
100%	MAZDA LAMPS
100%	MAZDA LAMPS
PART	MAZDA LAMPS
100%	MAZDA LAMPS
100%	MAZDA LAMPS

General Electric MAZDA lamps were used in the making of these film masterpieces because the completeness of the line makes it possible to give each individual scene the lighting best suited to its mood and action; because GE MAZDA lamps have the full colors of the spectrum and

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..In the Realm of Sound..

New 16 mm. Sound-on-Film Reproducer

ANOTHER 16 millimeter sound-on-film reproducer for the Amateur is to be announced shortly by the Ashcraft Sound System Company of Hollywood, according to very authentic reports. This new reproducer will make use of the regular 16 millimeter film, retaining both sets of sprocket holes, and is, indeed, a veritable "miniature standard sound" film since the same relation between sound track and picture has been maintained on the 16 millimeter as it is on the standard. Both picture and sound track are reduced in size to forty per cent. of the standard. Thus the sound track is 40 mills wide instead of the usual 100.

The projector is one of the better types now on the market and permits the projection of a picture of 9 by 12 feet. The entire outfit will operate on either 50 or 60 cycle Alternating Current. The perfection of a compact new type of photo-cell which within itself performs all of the functions of the conventional reproduction system, it is said enables the Ashcraft reproducer to render efficient service even in the hands of the most inexperienced projector owner.

Not the least important feature of this system is the provision for the direct reduction of 35 millimeter sound film to 16 millimeter. This will make instantly available the vast collection of 35 millimeter film recorded in the past few years.

Simplicity is the keynote of these devices which are the result of intensive research on the part of Ernest G. Ashcraft who has devoted many months toward the perfection of this 16 millimeter recording, reducing and reproduction system. Associated with Ashcraft in this project is E. B. Taylor who has been identified with the 16 millimeter industry for a number of years. Mr. Ashcraft has worked relentlessly to perfect a system which would maintain standards already set and to continue on in 16 millimeter film the standards as formulated in studio practice.

E. H. Hansen Heads New Engineering Laboratory

THE MOTION picture industry recently welcomed a new arrival into the field. The E. H. Hansen Laboratories have been formed to give the independent producer sound engineering service and to create new answers to the need for specialized equipment used in the production of talking pictures.

E. H. Hansen who heads the organization was one of the developers of the Movietone system now used by Fox and for five years was the Chief Recording Engineer for that organization. Previously Hansen was Consulting Engineer to the R.C.A. on photoelectric problems for a period of two years, and the New York World for three years.

Two new devices are being introduced to the industry. A speed control especially adaptable to the D. C. interlock motor, and a new system of variable area recording having no unmodulated exposure, inherently noiseless, and capable of sixty DB on the film.

New Portable Projector

A PORTABLE sound-on-film projector embracing several new and novel features for an equipment of this type has been announced by the James L. Carlton Laboratories of Elmhurst, L. I. The device will be marketed immediately.

Adjustable Volume Fan Marketed By Vallen

MARKETING of an adjustable volume ventilating fan, as an addition to the regular line of special purpose electrically operated equipment now manufactured by the company, has been announced by the Vallen Electrical Co. Inc., of Akron, Ohio.

The device, which is said to have been specially designed for duct installations, consists of a motor mounted outside the duct away from deteriorating and harmful elements. The fan shaft is at right angles to the motor driving shaft, with power transmitted through specially constructed gears which provide a positive drive. All shafts are carried on ball bearings.

One of the most unusual features of the fan is its adjustable pitch blades. The pitch of the blades, it is declared, can be adjusted to exactly meet the needs of the installation whether exhaust air, hot or cold, steam, fumes, spray, smoke, dust, odors, etc. Thus by blade adjustment the specific or weight of various elements can be compensated.

Fan blades were designed especially for this purpose by a well-known aviation engineer and their unusual design provide the unit with efficiencies and volume capacities that reflect the influence of the swiftness of the airplane, the company declares.

New Company Succeeds Dworsky Machine Corp.

A NEW ORGANIZATION to succeed the Dworsky Film Machine Corp. and which will carry on under the name of the Film Processing Machinery Corp., with headquarters at 354 West 44th Street, New York, has been announced by John Manheimer, representative of the newly formed company. It will operate under the Dworsky patents. Announcement is also made that Sam Dworsky, associated with the former company since its inception, will continue with the Film Processing Machinery Co., in charge of factory operations, design and equipment, with headquarters at 5-15 48th Ave., Long Island City.

Products manufactured and offered by the company include film buffers, renovators, rewinders, film cleaning fluids and film and projection room accessories.

New Projection Organization Established in New Orleans

THE INTERNATIONAL ASSOCIATION of Projectionists and Sound Engineers of North America was recently incorporated in Louisiana, with headquarters in New Orleans.

The officers are: John Tessero, international president; M. E. Clark, executive vice president; J. R. Jordan, international business agent; A. Booksh, general secretary-treasurer.

No Sound Engineer Should
Be Without Volume 2
Cinematographic Annual



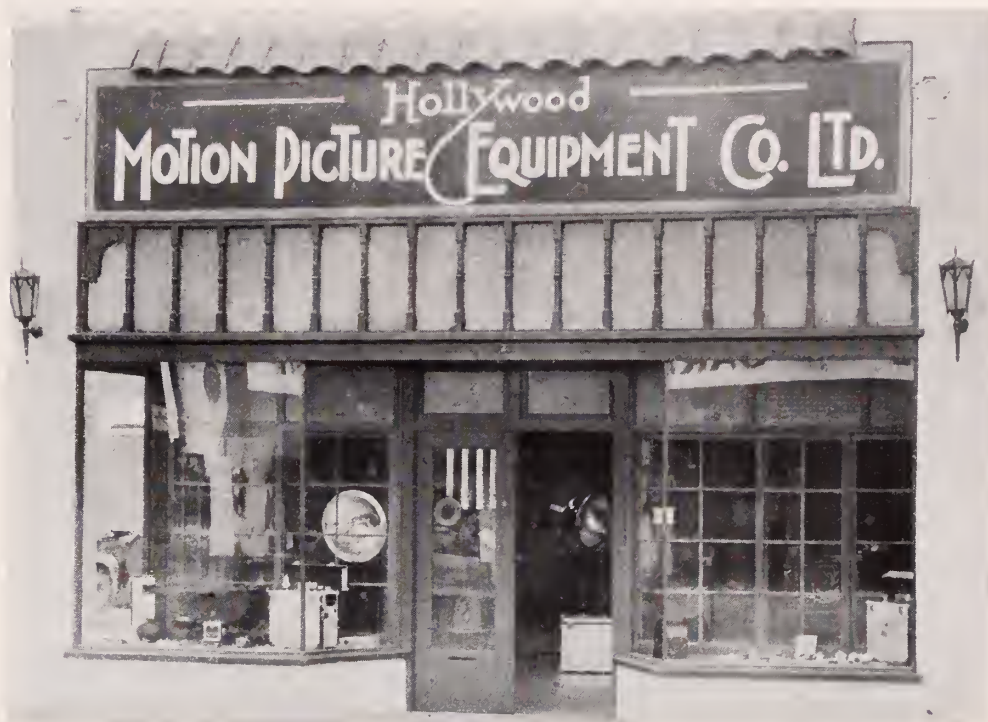
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Principles of Sensitometry and Their Practical Application

Part 11

UP TO THIS point sensitometers have been discussed somewhat generally. All the instruments described are more or less research instruments, there being usually only one instrument of each type available. During the past year there has been made available to the motion picture trade a sensitometer of the non-intermittent time scale type for use in laboratory control work. This instrument is manufactured by the Eastman Kodak Company and is known as the Type 11b sensitometer. Although this instrument has been described in detail before in the pages of this magazine, it is considered advisable to restate the facts concerning it in the columns of this article, inasmuch as this instrument has been generally accepted, in Hollywood at least, as the sensitometric standard for motion picture control.

The Type 11b sensitometer, shown in Figure 11, is designed especially to meet the needs of the modern motion picture film laboratory and sound department. It provides a precise and rapid means of making routine sensitometric tests for the control of development processes and for other purposes bearing on the production picture and sound prints of the highest quality.

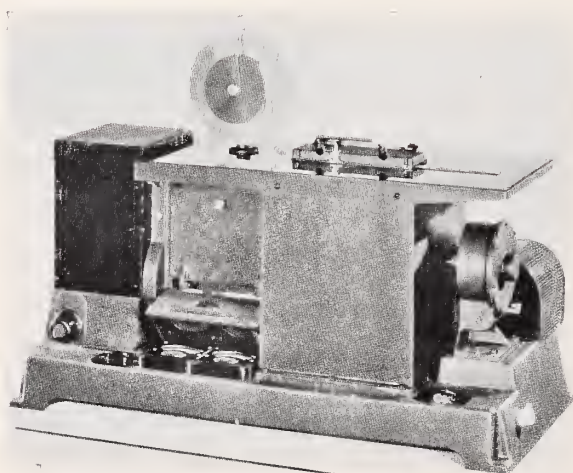


Fig. 11

The particular advantage of the instrument, aside from its operating simplicity and ruggedness of construction, lies in its precision. It impresses on the film under test an accurately predetermined scale of exposures which may be maintained constant from test to test over long periods of time. This exposure scale consists of twenty-one steps produced by exposures equal in illumination and ranging from 1 to 1024 in relative times, each exposure being 1.414 (square root of 2) times as long as the next shorter. This constant factorial difference between steps permits the density readings to be spaced at equal intervals along the log E axis, in constructing a density-log exposure curve.

The instrument is shown in detail in Figure 12. This shows a partial vertical section through the optical axis of the instru-

ment. "L" represents the standard lamp which is the source of illumination. A selectively absorbing filter, F, is placed in the path of the light coming from the lamp, L, in order to modify its spectral composition to the desired quality. A plane mirror, M, reflects the light at right angles thus illuminating the exposure plane, EP, in which the photographic material is placed during exposure. The rotating cylindrical

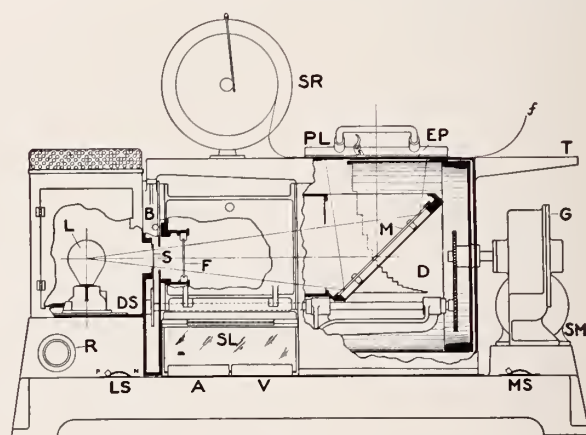


Fig. 12

shutter or drum, D, having 21 exposure slots increasing in length by logarithmic steps from the shortest to the longest, controls the time factor of the exposure incident upon the adjacent steps of the exposure scale. The exposure plane is equipped with suitable guides so that two strips of 35 mm motion picture film may be placed in position and exposed simultaneously. The platen, PL, when pulled down serves to hold these strips accurately in the exposure plane during exposure. The drum, D, is driven at a constant angular velocity by a synchronous motor, SM. This motor runs at 1800 rpm when operated on a 60 cycle alternating current supply line and at 1500 rpm if operated on a 59 cycle alternating current supply line. The drum is connected to the synchronous motor through the reduction gear, G, consisting of a worm and worm wheel having 150 teeth, thus driving the drum at 12 rpm when operating on a 60 cycle line and at 10 rpm on a 50 cycle line. When the machine is started by throwing the master switch, MS, the motor drives the drum continuously at a very uniform angular velocity, the desired exposure being made by the operating of the selector shutter, S, which opens while the photographic material is protected from the exposing radiation by the opaque portion of the drum, D, and closes immediately after the series of slots in the drum have passed the exposing apertures. This selector shutter is connected to a one turn mechanism which is driven by a shaft directly connected by a pair of spur gears to the shaft carrying the rotating drum, D. The one turn mechanism is actuated by the bottom, B, thus opening the aperture O at the proper instant and closing it again after the desired exposures have been made.

Supplied with this instrument are two calibrated lamps, one for use in exposing positive film and one for negative film. The effect current in amperes, the voltage tolerance, and the distance at which the lamp must be set to produce the standard illumination on the exposure plane, are furnished with each lamp.

(Continued on page 44)

S. M. P. E. Notes

Starting with this issue, the AMERICAN CINEMATOGRAPHER will publish a page dealing with activities of the Society of Motion Picture Engineers. Mr. Sylvan Harris, Editor-Manager of the S.M.P.E., prepares the copy—The Editor.



Problems of Standardization

THE PRESENT year apparently is going to be quite prolific in giving birth to standards of dimension, not only in phases of the motion picture art already established, but in new ones as well. The standardization of the aperture dimensions for 35 millimeter film has already progressed almost to the point of their acceptance, and it remains only to secure unanimity of agreement on relatively minor differences to establish them formally. The inception of the new phase of motion picture technology, namely, the 16 millimeter sound-on-film, gives rise to the need of standardization of film dimensions, so that those who are and who will be economically interested in non-theatrical and amateur equipment will be able to proceed with their designs along fairly well defined lines that will be uniformly satisfactory to all concerned. By so doing, all chances of confusion due to lack of interchangeability of machines and film will be avoided.

The standardization of film dimensions, now being undertaken by the Standards Committee of the Society of Motion Picture Engineers, involves the following questions: (1) the distance from the picture gate to the sound gate; (2) the width of the sound track; (3) the dimensions of the scanning beam; (4) the width of the margins at the sides of the sound track; (5) the location of the sound track on the film; and (6) the size of the picture.

S. M. P. E. Convention

The next convention of the Society of Motion Picture Engineers is to be held in Washington, D. C., May 9th to 12th, inclusive. This will be at the height of the Washington Bi-Centennial, and in addition to the usual attractions of the center of national interest, there will be much of a technical nature to attract members and visitors to the convention. An especially interesting program of papers dealing with motion picture technology is being prepared by the Papers Committee, and in addition, an exhibition of newly developed motion picture apparatus, similar to the exhibitions at conventions in the past, will be held at the convention headquarters, the Wardman Park Hotel. Everyone is invited to attend the convention, whether he is a member of the Society or not; full information can be obtained from the Society headquarters at 33 West 42nd Street, New York, N. Y.

Committee Activities

Much activity is going on among the various S.M.P.E. committees, and many contributions to the art are expected from them this year. The Projection Practice Committee is conducting an intensive study of the various causes of defective projection in theatres, and for that purpose is investigating the various tensions, clearances, and tolerances which exist in a projector when new, and the extent to which they may be allowed to depart from the original values before the machine requires overhauling. In order to determine this, it is neces-

sary that the projectionist be furnished with a knowledge of what these values are and should be, and how he may measure them in a simple and inexpensive manner. The work of the Committee is expected to culminate in the suggestion of a design for a small kit of tools which will permit the projectionist to check his machines accurately and periodically.

The Committee on the Development and Care of Film is conducting a careful study of the various methods of "processing," green film after its release from the laboratories, preparatory to projecting it. This processing involves lubricating the surfaces or edges of the film in order to permit it to run through the projector without shedding emulsion and without collecting dirt or becoming scratched. Many thousands of dollars are annually wasted by permitting film to be ruined in projectors due to the accumulation of emulsion or wax at the gates, which causes the film to be subjected to undue strains at the sprocket holes and elsewhere.

The preservation of film of historical interest is a matter of particular interest at the present time, in connection with the establishment of the new National Archives Building at Washington, D. C., in which a department devoted to the preservation of such film is devoted. The Committee on Film Preservation of the S.M.P.E. is conducting a study of the best means to be used for preserving film, not only with regard to its storage, but to the various methods of preparing copies for current use, the establishment of an appropriate library system whereby these copies may be put to good use and the original and first copies of the original may be maintained somewhat in the manner of standards and sub-standards.

The sub-committee on the Glossary is preparing to begin work on a revision of the glossary of terms used in the motion picture industry, which was last published in the November, 1931, issue of the Society's Journal. The language of motion picture technology changes with time and with the development of the art, and so it is the work of the Committee to revise the glossary at least once a year, adding the new terms that are continually being created and revising the definitions of the older terms.

The Projection Screens Committee, the Sound Committee, and the Projection Theory Committee are all at work on various problems pertaining to the exhibition of pictures and the reproduction of sound. In particular, the Sound Committee is this year concerning itself with the study of the acoustic treatment of auditoriums, and in this connection, the Society is endeavoring to enlist in this work the interest of the architects of the country. Arrangements are being made whereby the American Institute of Architects and the Society of Motion Picture Engineers can each obtain the benefit of the other's experience.



Benoit Busy in France

GEORGES BENOIT, A.S.C., sends us word that he has been working steadily for the past two years with the Pathe-Natan Company of Paris. This company has a plant that includes ten big stages, all completely equipped for sound. Benoit recently finished photographing "Une Belle Garce," "Partir," directed by Maurice Tourneur, "Au Nom de la Loi," also directed by Tourneur, and has started work on "Les Gaietes de l'Escadron," which Tourneur is also directing. It was twenty years ago that Tourneur staged this last named piece at the Theatre Antoine in Paris.

Costuming and Cinematography

(Continued from page 15)

In the old days, before the introduction of the present super-panchromatic films, an additional restraint was imposed in the matter of color and material; but today we can use almost any color, and any material that is suited to the individual wearer. And here psychology plays an interesting part; for while we could economize greatly by using monochrome materials, and substitute textiles, experience has shown us that the psychological effect upon the stars of such makeshifts is definitely bad. Even the most experienced actress will give a better performance in clothes that combine the colors to which she reacts most favorably, and made of materials that are "the real thing." Conversely, she will subconsciously be inhibited by monochromes and makeshifts, even though they would photograph exactly the same as would the genuine colors and materials.

In this connection, another phase of the importance of ample time for costume preparation must be mentioned. Although we have, of course, an unusually accurate knowledge of the measurements and psychological reactions of each player, there would be a vast deal of benefit had we more time for fittings; not to improve the physical fit of the costumes, but to assure the psychological fit. Unless an actress has time to become accustomed to a costume—to become so familiar with it that she becomes unconscious of it—she cannot be free to do her best work. This may seem rather far-fetched, but in any sort of dramatic endeavor—and particularly in motion pictures—we are dealing so much with the emotional and psychological elements that no such details may safely be overlooked.

This detail is particularly important in the case of period costumes, of course. Period costumes are essentially unfamiliar to modern men and women, and to truthfully re-enact a period drama, the players must first of all feel absolutely natural about their clothes. Period designs are, in themselves, tremendously interesting. They form the basis of all costume design, for current styles are always more or less adaptations of previous modes. The Empress Eugenie hats and the current modified leg-of-mutton sleeves are examples of past modes revived with a modern touch adapting them to modern conditions. The reverse of this treatment may often be used to good advantage in costuming period pictures; for unless some action or character in the picture definitely dates the story, the designer can, if he knows his periods, adapt the costumes of the approximate period of the story with a modern touch that makes for better psychology for the players, and makes the designs themselves more pleasing to modern audiences. There is a precedent for this, in a way, in the fact that the old masters of the middle ages and the renaissance painted classic and biblical characters in costumes adapted from those current in the painter's day. Similarly, until the time of David Garrick, it was customary to enact classic and Shakespearean roles in contemporary dress. The motion picture, of course, demands greater accuracy than this latter example, but, save in stories where the action is definitely dated, period costumes can advantageously be modernly adapted. In the latter instance, of course, the strictest accuracy must be observed, particularly in periods like the '90's, and the Victorian era, which are still relatively fresh in the memories of the older members of the audience.

As regards modern costumes, the motion picture wields a far greater power than most people actually in the industry realize. But those who, like myself, have been connected with costuming and fashion creation before entering pictures, know that it was the American motion picture that broke the power of the Parisian fashion creators. Women the world over no longer ask "What is Paris going to wear?" but, "What is Hollywood going to wear? What will Joan Bennett, and Gloria Swanson, and Constance Bennett, and Norma Shearer, and Elissa Landi be wearing?" World-travelers bring back tales of

Agree On Image Area

THE MAJOR motion picture studios and theatre circuits have adopted a uniform practice governing the image area on 35 mm. film for photography and projection which will result in an important improvement in photographic quality, according to official announcement by the Academy of Motion Picture Arts and Sciences.

Companies which are putting the Academy specifications into effect for forthcoming productions include: Columbia, Educational-Metropolitan, Fox, Hal Roach, Metro-Goldwyn-Mayer, Paramount, RKO-Radio, United Artists, Universal, and Warner Brothers-First National.

Studio camera apertures will be immediately adjusted to photograph an image .868" by .631" on the negative, with center line .7445" from the control edge, to be correlated to theatre projector apertures .600" by .825", with center line .7380" from the control edge, the difference being necessary allowances for shrinkage and mechanical tolerances.

Specifications and instructions for adapting apertures, lenses, and screen masks will be distributed to the projectionists of all theatres in the United States during the next two months.

The uniform practice will apply to all types of motion pictures made for exhibition in theatres and will supplant the different image areas used for disc prints, sound track prints and silent versions. It is expected to settle difficulties which have vexed studios and theatres since the introduction of talking pictures and to end the wide variation in projector apertures for which studios have had to provide in photography.

Principle advantages of the uniform practice will be that when equipment is adjusted to the specifications, movable lens mounts, sliding aperture plates and other adaptive devices may be dispensed with in theatres, the likelihood of cutting off heads and feet of characters on the screen will be reduced, and both studios and theatres will be assured that the full height of the photographed image will be transferred to the screen. Increased efficiency in photographic operations on the studio set will also be made possible through the matting out of wasted film area which it has been necessary to photograph to accommodate variation in theatre apertures.

Projection of the picture image by the new specifications will result in screen proportions of approximately three by four in theatres with medium projection angles. The screen will appear slightly wider when the picture is projected from a low angle and slightly taller in theatres with steep projection angles.

The present agreement among the companies to adopt a uniform practice has developed from research, surveys and conferences between representatives of studios and theatres during the past ten months, under the sponsorship of the Academy Producers-Technicians Committee. For the past two years studios have been composing sound pictures according to temporary recommendations issued by the Academy until theatre projection conditions should become sufficiently stabilized to warrant establishment of more permanent specifications.

slant-eyed Chinese maidens copying Clara Bow's costumes. The daily press tells of foreign nations attempting to ban American films, ostensibly to safeguard the morals of their youth, but actually to protect their own clothing, furniture and apparel industries. Yes, whether we realize it or not, Hollywood and its motion pictures have become the style leaders of the world. It is therefore up to us to design costumes and sets that are worthy of that leadership, and to design them so that the cinematographers can photograph them so that the world may best see and follow them.

Talking Pictures in India

Continued from page 12)

But that is far from a true picture of Indian business. In Bombay, the Parsi colony, originally from Persia, forms the financial backbone of the industry. Working with them are the driving forces of the Mohammedan and the quiet aggressiveness of the Hindu. In Calcutta, Parsi, Hindu and Mohammedan share the executive and financial responsibility, with the Brahmin and Marwari assisting in organizing and financing. Bengal is predominately Mohammedan, and these people form a foundation of firm executive ability in most organizations. Sikks, Pathans and other Hillmen form an excellent labor combination.

Divide the parts and destroy the whole has ever been the prime objective, when MANY are ruled by the FEW. This fact can only be realized in its full extent by one who has worked with, and has the confidence of the "many." This confidence of my Indian friends I deeply treasure. America will never learn of the burden under which India is struggling, from London censored news dispatches. Neither will America learn of India from books such as "Mother India" appropriately classed by Mr. Ghandi as "The report of a sewer inspector." Incidentally, this vile, imaginary and subsidized book, by an American authoress, has caused a deep distrust of Americans as a people, and undoubtedly greatly harmed India in the eyes of its readers in America. Privileged to work with the people of India, it has been my pleasure to find that nowhere on this earth could be found a more honest, simple, unaffected and friendly people. Today, they are a frightened, harried people. Confidence with and in, a "European" is a rare quality, for over their heads hangs continually the sword of "Lawless Law" an espionage system rivaling that of the old Czarist regime of Russia where for the most simple utterance of "disaffection" one just disappears no trial no legal processes and the end is some deadly detention camp. But above all of this rises the Indian man and woman a most beautiful picture of life.

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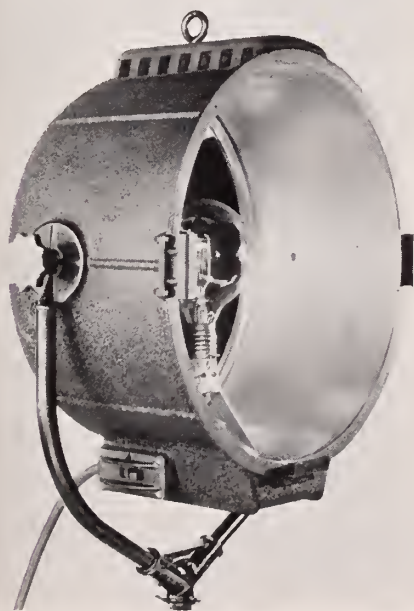
New "Rico" Branch Office



THE RADIO Installation Company of 1404 Magnolia Avenue, Los Angeles, announces the opening of a branch office and display room at 5510 Franklin Avenue, Hollywood. The firm also states that they will have other important announcements within the next few weeks that should be of interest to independent producers.

National Adds Cutawl

THE CUTAWL portable machine, a product of the International Register Co. of Chicago, for use in making poster cutouts and clever advertising displays, has been added to the line of the National Theatre Supply Co.



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(See page 2)

Amateur Movie Making

by WILLIAM STULL, A.S.C.

IN MAKING any motion picture other than the most banal animated snapshots, the first and most vital considerations must be thorough preparation before the actual camerawork commences. Only in proportion as the preparatory work is perfect will the picture itself be perfect, and its accomplishment easy. This is quite as true of scenic films, by the way, as it is of dramatic or documentary ones. Of course, one can rarely prepare these as completely as one does the latter types, but one can always make certain rough outlines of what to shoot, and what not to shoot, thereby facilitating the actual business of shooting.

The A-B-C's of Cinematography

Once the preparatory stage is passed, the technique of camerawork becomes of paramount importance. This is a subject upon which volumes have been written; obviously, this present article does not afford the space for an exhaustive discourse upon it. Yet, for the benefit of such readers as may be considering the entry of a picture in the American Cinematographer's contest, a few reminders of the fundamentals of cinematography, and a sketchy outline of various other more advanced features thereof may not come amiss.

The three basic features of cine camerawork are: Exposure, Focus, and Camera-manipulation. The first two, of course, are "purely elementary, my dear Watson, el-e-e-m-e-n-t-a-r-y". Yet they still trouble a large corps of the army of amateurs. However, between the wide variety of accurate cine exposure-meters and photometers now available and the surprising latitude of modern 16mm. emulsions, no one has any excuse for making a single incorrectly-exposed scene. It he has not the experience that enables him to judge exposure with his eyes, he can readily purchase it—in the form of one of these meters—for a few dollars. The same holds true of focus. If one's eyes are not good judges of distance, there are plenty of means of getting the proper focus, ranging from the ground-glass focusing methods offered in the de luxe Victor and Bell and Howell cameras and the correctoscope attachments, through a wide variety of optical range-finders to the range-finder of the professional cameraman—the old-fashioned tape-measure.

The phrase "camera-manipulation" covers a multitude of sins. It begins with the ridiculously elemental business of holding the camera, and proceeds through pans, tilts and camera-angles to the vastly abused perambulator and crane-shots of the professionals. But the essence of the matter lies in remembering that the camera is the audience's eye; the cameraman must make it see what he wants the audience to see, **the way he wants the audience to see it.**

Of course, the first thing is to hold the camera steady. If it is not steady, the picture on the screen won't be. For serious work, this means putting the camera on a tripod. Of course, most 16mm. cameras are sold as hand-cameras—but very few of us have hands as steady as a tripod. And even if we had, there are moments when even the best of us are unsteady. Therefore a tripod, **always**, in serious work.

In panning and tilting, again remember that the camera is the eye of the audience. The medical gentlemen tell us that the human eye is blind when in motion; at any rate, the audience's eye is blind when the camera is moved rapidly. Therefore, make all of your pans and tilts slowly. Better than that, make them **too slowly**. Rehearse them; take a speed so slow that you think it is too slow—and then when you

photograph the scene, pan (or tilt) **twice as slowly** as that. Then your speed should be about right! Above all, have a reason for every movement of the camera; don't fall into the habit of picking up the camera and waving it around like one of Mr. Capone's machine-gunners abolishing a roomful of hostile mobsmen.

Every pan and tilt must be made for a definite reason. That reason must be one of two: either to include some thing or action which cannot be included in a single, stationary shot, or to follow the course of some moving object. If, for instance, you are standing on the shore of a beautiful lake—say Crater Lake, in Oregon—and you wish to give the audience an idea of its size, as well as its beauty, you would have to pan, just as you would have to swing your own eyes to take it all in. Similarly, if you wanted to show the full, impressive height of Half Dome, in the Yosemite Valley, you would do it best by tilting up or down, just as you would naturally run your eye from the bald, white top of the mountain to the valley at its base. Every shot of this type has a definite starting-point, and an equally definite finish. If the scene is to be of the slightest value to the picture, the cameraman must recognize these two before making the shot, and take pains to begin and end his scene with them; holding the camera steady on the start long enough for the audience's eye to perceive it fully, then moving slowly and steadily on to the finish, and holding that for the same purpose. A pan or tilt that does not do these—particularly in a scenic film—is valueless.

Follow-shots are equally important, though usually more difficult to make well. The object followed must be held steadily in the centre of the field, and in good focus. In this case, of course, the speed of the object's motion governs the speed of the camera-movement. This is the only time when fast panning or tilting is good cinematography; the audience's attention is focussed on the object being followed, which is held stationary relative to the limits of the picture. Therefore, the fact that the background may be blurry and confused is of no importance. If you were, for instance, photographing Barry Wood or Orville Mohler going places with the ball in a football game, the interest would naturally be centered upon Wood or Mohler rather than upon the background of turf and stands.

Camera-Angles

Essentially, "camera-angles" refers to the placement of the camera. Actually, its meaning runs the gamut between the simple distinction of close-up, medium-shot, and long-shot to the cinematic subtleties discussed by Rouben Mamoulian in the last issue of this journal. First of all, of course, these simple meanings must be understood. The long-shot in its simplest form is a shot that includes the full figures of the actors; it may be just this, or it may also include a good deal of background, with the figures so small as to be of secondary importance. The medium-shot brings the camera closer to the actors; it usually includes only parts of the figures—say from knees or waist up. The close-up is the next logical progression; it may show the head and shoulders of the player, or it may be restricted to a big head. This latter, though, is difficult to make artistically, and should be avoided.

These various shots all have their definite places in camera technique, and, when properly combined, add variety to any

(Continued on page 43)



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Reflectors for Exterior Photography

by **CHARLES G. CLARKE, A.S.C.***

MOST OF US who have photographed close-ups out of doors in the bright sunlight are many times a little disappointed at the results on the screen, due to the unnatural reproduction of highlights and shadows. This is particularly noticeable in close-ups where one side of the face is extremely white and the shadow side unnaturally too dark. The film does not have the same power to accommodate and correctly register such extreme contrast of light as does the eye. To compensate for this unfaithful rendering of contrasts, these extremes must be reduced to obtain the most natural result on the screen, and this is done by reflecting light onto the shadows by artificial means. This can be accomplished by many highly reflective substances, such as common bed sheets. After trying all sorts of materials the professional camera men of Hollywood have found the "reflector" I am about to describe as the most generally useful when all of its requirements are considered.

While the studio men use every conceivable size and shape I would say a good size for the average amateur, considering portables and ease of handling, would be about 3 x 4 feet. Its best form of construction is to make it to fold in half like a book, as this protects the reflecting surface and reduces its size when folded, thus making it more practical to carry about. Two frames are made of 1 x 3" dressed pine or similar lumber, 4 x 1½ feet, and the corners firmly joined to stand rough knocking about. These are hinged together on the long side and each side is covered with a sheet of 3 ply veneer or composition board. The smooth surface can now be painted with a variety of reflective covering and each has its especial use. For average light conditions about the best reflector is obtained by first varnishing the veneer, and then when the varnish has dried slightly, enough to be "tacking," powdered aluminum is dusted over and left until the varnish is dry. The surplus powder that has not adhered is knocked off and used over again. The surface reflects a soft diffused light, yet of sufficient brilliance to be projected quite a distance. The reader by now realizes that no one type of reflector is "best" because after all they are used to modify every conceivable variation of natural lighting. The more critical worker has several types to reflect the different conditions. Roughly stated, the rule is the greater the contrast of natural lighting—i.e., the brighter the sunlight—the more need for brighter reflected light. The reflectors can generally be moved close to or from the object photographed until the right balance of light is achieved. Some of the other surfaces used are plain flat white paint, which is less reflective than the aluminum dust. Metallic gold powder when used with panchromatic film is valuable for the rendering of skin texture and blue eyes in large close-ups. This color of the surface has the effect of a filter and hence its value. The reflectors described so far have been for the lighting of close-ups. Of course, reflectors are used to throw light into dark rooms, under trees, and such places where there is not enough light, or the highlight and a central degree of contrast is not sufficient to render a brilliant picture. For this purpose light of a bright strong nature is required, so reflectors are made of tinned metal sheets attached to the frames. The flat sheets of metal reflect a pattern of

light like a mirror, and some of the reflectors can be hammered here and there so that concave depressions spread the reflected light here and there. Many beautiful background effects can be obtained with this type of reflector, such as projecting the light through branches of trees to produce artistic shadows of light and shade. Obviously, this type of reflection is too brilliant to be used for portraiture. For the saving of weight and bulk both sides of the "reflectors" are made use of, the soft, fragile surfaces inside, the backs covered with the metal sheets.

One of the greatest aids in good close-up exterior photography are "diffusers." These are put between the object and the sun to soften the source of light when it is too bright. The contrast is thus reduced and a softer reflector can be used—or in many cases disposed of. This is often desirable, because many persons cannot stand the glare of a bright reflector, or have natural expressions when they are used. These "diffusers" are simply metal hoops of cloth, the cloth generally being white Chinese silk, or double thicknesses of cheese cloth. The hoops or frames are about 4 to 6 feet in diameter and can be made collapsible.

The use of reflectors in the hands of the inexperienced can be, and often is, abused. The most judicious placement of the reflector and its intensity must be correctly controlled, or the result on the screen will be more unnatural than if the scene had been taken without them. In the case of portraiture, the idea is not to equally balance the shadow side of the face with the highlight side, but to prevent the shadow side from recording unnaturally too dark. This discussion borders on the phase of lighting and no definite rules can be given,—that being up to the artistic ability of the camera man and his judgment in using the proper ratios of contrasts on each individual subject before his camera. As a rule women are photographed more beautifully when the sources of light are soft and diffused, and the contrast between highlight and shadow is not too great. Men require a more bolder—or contrasting—lighting. The extreme is reached when the contrasts are so great and the sources of light are from such unnatural positions as to produce the mental effect of unrest and unreality. Such lighting effects often enhance certain moods of mystery and intrigue and by some are known as "dramatic" lighting. To my mind drama covers all moods, and the skillful photographer will light his subject according to the thought of the scene depicted. Light, cheerful scenes require bright, brilliant photography, and sinister, mysterious moods are best conveyed by erotic lighting. While some people have more artistic ability than others, still in the case of lighting the science is built upon common sense rules. When we analyze lightings as they occur in nature, we find that the general condition is a bright sun above, which is the source emitting rays which pass through various diffusing mediums, such as haze and clouds, until they strike the object. Other rays are reflected back to the object from the ground and objects all around, and from the sky above, and they illuminate the shadows. If there was not this reflected light, the shadows would be absolutely black. The ratio, or "balance," between the direct light and reflected light varies constantly in nature. Inasmuch as the light source in nature is generally above us, we have adapted ourselves to this source of light and any other is unnatural. We are accustomed to see the shadows fall below the objects that obscure the light from above. Therefore when we want to light a subject by artificial means so that the lighting imitates natural lightings, the artificial source is placed

(Continued on page 37)

*Mr. Clarke is one of Hollywood's best known Cinematographers, and has been photographing feature productions for many years. Back in the silent days you perhaps recall "The Red Dance," in which Dolores Del Rio starred. That was photographed by Mr. Clarke. And Mr. Clarke and George Schneiderman photographed "Four Sons." Among Mr. Clarke's sound pictures are "So This Is London," starring Will Rogers, "Annabelle's Affairs," "Good Sport" and many others.—The Editor.

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Mickey Mouse and 16 mm.

by **WALT DISNEY**

Creator of "Mickey Mouse"

I SUPPOSE THAT during my working hours I ought to get more than my fill of motion pictures and cinematography; but apparently I don't. At any rate, I spend a large part of my spare time photographing things "on land and sea" with a little Victor 16 mm. camera. Cinematography is evidently in my blood for good and all—for before my cartooning days I was a cinematographer for the Pathe, Selznick and other news reels. During the time when Mickey Mouse was young, and I was building up the staff that produces his pictures and the "Silly Symphonies," I could find no time to indulge my fondness for photography but now that things are well organized, I am finding more and more pleasure and relaxation in making movies with my little 16 mm. camera.

A few months ago I took a trip, combining business and pleasure, to the east, through the canal, Cuba, Florida, etc. Before starting, my first thought was for a 16 mm. camera. The result was the Victor, not alone for its convenient portability, but for the many technical features that my newsreel experience had taught me to value. With it I managed to bring back many hundred feet of interesting films of my vacation. And from it I learned that, once you've made a start in cinematography, you can't stop—you're a cinematographer for life.

It had been some years since I had handled a motion picture camera, though, and I was constantly amazed at the improvements that have come in that time. Then, semi-professional and amateur cine cameras were great, bulky outfits, and quite difficult to operate. Today, if my little Victor is anything to judge by, such cameras are far different, small, easily operated, and amazingly complete. Lenses are tremendously faster; in those days, f:3.5 was considered very fast, even by the professionals. Today, f:1.5 objectives are in common use by the amateur. And film is tremendously better—more color-sensitive, and vastly faster than even the best that was available to professionals. Yes, the 16 mm. user of today is certainly a far luckier fellow than even the best-equipped professional of a few years ago.

When I bought my camera, I intended to use it entirely for my own pleasure. But Mickey Mouse intervened. He always does! Ever since I first drew him, he has become more and more real, and, like a real child, ingratiatingly demands more and more of my spare time. I had never expected that he would become interested in amateur movie making, though! But he fooled me, and did. I think it started while I was in St. Louis, and visiting the wonderful zoo that they have there. Something (it must have been Mickey) whispered into my ear and asked me if I didn't realize how interesting it would be to have some films of the way the different animals and birds walked and flew, and how useful it would be in showing my animators how to draw them for the cartoons. I didn't pay too much attention to Mickey's urgings, for after all, I was on a vacation. But I did unlimber the camera, and shot a number of rolls of the various birds and beasts, telling myself, however, that I was doing it because they were so interesting to me. But when I got back to the studio, Mickey made me run the films for the animators, who got a number of ideas from them. Now I'm going to make more films of the same sort, doing them more carefully, and in slow-motion, so that we can really analyze the movements. One of the funniest such films I've made yet is of a pelican "taking off" from the water; it is really surprising the way he taxis along, and laboriously boosts himself into the air.

One of the questions that I'm most frequently asked is, "How do they make animated cartoons?" Not all of the people that ask this are laymen, by any means; many are users of 16 mm. cameras. These latter really should know, if they'd only stop and think it over. Look at a strip of motion picture film; it doesn't really move; it consists of a series of still photographs, taken in succession, and differing very slightly from each other. Well, imagine that each of these still photographs is a drawing, rather than a photo—and you'll have the basic idea of an animated cartoon. All you have to do is make your set of drawings and photograph them in order, one frame to the drawing, upon a strip of moving picture film. It can be done with an amateur camera—and patience. The Victor camera is well suited for this, since it has a provision for hand-cranking. The hand-crank shaft is geared so that each turn of the crank exposes eight frames, however, so a reduction gear is necessary, so that only one frame at a time is exposed.

But probably the simplest explanation of animated cartooning would be to trace the history of one of Mickey Mouse's pictures. They are made, of course, by a large staff, as we have to turn out a completed picture every two weeks or less. It is not a one-man job, though for amateur purposes one man—a patient one—could manage it all.

First of all, there must be a story. It must be short but complete; we have only seven minutes of screen time to start our story, tell it, and end it in each picture. In our pictures, both as to story and characters, we try to avoid the grotesque. Mickey and his companions may be strange, but we try to keep a note of believability in them and their actions, for all that. They may seem improbable, but not altogether impossible.

To tell our story, we make drawings of every movement: 10,000 to 12,000 drawings to each picture. But there are many short-cuts that reduce the amount of work to the minimum. The backgrounds are drawn upon heavy white paper, and the actors upon transparent celluloid sheets which can be placed above them. One man draws the background, and others, called animators, draw the moving characters. These animators do their work on drawing-boards in which are set glass plates, with lights under the glass. They draw the characters in pencil, on paper. When they finish one drawing, they can place another sheet over it, and, thanks to the light below, get the next stage of animation—the next drawing—matched up perfectly. Then by quickly flipping the two or more sheets, they can see if the action animates naturally.

From the animators, the drawings go to a group of girls who trace them with India-ink onto the celluloid sheets. These are then taken by another group of girls, who fill in the opaque portions (on the under-side of the celluloid) with black, white, or gray, as the animator may have instructed.

Then the "cells" and the background are brought together in the camera-room. The background is placed on a table, under the camera. The various cells (sometimes three or more, according to the number of moving characters) are placed on top of the background. Each sheet is fitted with perforations at top and bottom, which fit over registering pegs in the table, and keep all parts of the picture in their proper relationship. Then a plate-glass cover is dropped down over them, to keep them flat, and the picture is made. The cells are moved, the next one or ones substituted, and the next frame of film is exposed. Our cameras are motor-driven; they are fitted with an electric motor that is constantly running,

and a clutch which, when tripped, allows the motor to turn the camera just enough to expose one frame and stop with the shutter closed. For illumination, we use mercury-vapor tubes; incandescent lights would do quite as well (in fact, we use them for making tests); but the mercury-vapor tubes do not generate any heat, and are far more comfortable to work under. We use positive film for this work, as we have no need of either the speed or color-sensitivity of negative.

Reflectors

(Continued from page 34)

somewhat above the person or object to be photographed. The reflected light comes from every angle all about and is therefore greatly diffused, and never equals the intensity of the direct light. When the source of light comes from the uncustomary angle, such as from below the object, the shadows are cast upwards and an extremely unnatural effect is produced.

These are the basic rules of lighting and I cannot attempt in this article to elaborate more. Incidentally, a splendid explanation by a qualified artist appears in the "Cinematographic Annual" and should be read by everyone who wishes to improve his work. I wanted to mention these few rules here to illustrate the importance of placing the reflectors in the correct positions in relation to the subject to be lighted. One of the very few cases where strong light is reflected from below is where snow is on the ground, as we all are familiar with the unusual lighting—and hence expressions of the faces about us. In snow scenes, of course, that lighting is natural, but for the lighting conditions which we more usually encounter, we don't want to make the mistake of reflecting the light from beneath the object. I have gone a long way about before getting to the statement of not to use the reflectors from the ground below the object. But that is the general mistake, and I want to make it clear why it is wrong. If the reflectors are used close to the actors, then the reflector should preferably be never lower than the line of the camera. About the only definite rule in this respect is to try to imitate nature and reflect the light from angles such as she does. To raise the reflectors up to where they belong, easels or some sort of adjustable support should be provided so that the reflector can be easily turned to various angles, as after all they are just another form of minor or spot light. Easels or collapsible tripods with pegs for the various lights are generally used for this purpose. By adding this apparatus to your equipment, a great many new lighting conditions will be opened up to you. For example, the beautiful "back light" conditions which are so much used by the studio men, can be used by the 16 millimeter enthusiast if a few simple precautions are taken. This type of lighting is produced when the objects are between the camera and the sun. Instead of the old rule of having the sun at the photographer's back, he directs his camera towards it, although, of course, not shooting into it. The objects are thus outlined in a halo of strong light and stand out strongly against the backgrounds. Thus an effect of relief or third dimension is produced, and the hair is beautifully outlined with light. To compensate the strong contrasts, light is reflected in to more equalize the ratio. The lens must be shaded from the sun or otherwise the glass of the lens will flare and ruin the scene. The 16 millimeter worker might try his next close-up by putting his reflector on a high easel and then shooting through the easel beneath the reflector, using the shade of the reflector to shade his lens. Those shady dells under dense trees that look so beautiful to the eye, and flat and murky on the screen, can be used for backgrounds of appealing scenes when touched up with splashes of light. Interior scenes can be made when the light can be reflected in. If your reflector has to be in the shade to use it from its best

Scenarios For the Amateur

A NEW COMPANY, Home Movie Scenarios, Inc., has recently been formed for the purpose of providing amateur movie makers with complete and practical scenarios suited to amateur requirements. The concern is headed by Daniel B. Clark, twice president of the American Society of Cinematographers, and at present photographing Tom Mix for Universal. Associated with him are a number of well known professional writers, directors and cinematographers, all of whom are 16 mm. enthusiasts as well as professional cinema experts.

"Our enterprise," states President Clark, "grew out of our individual interest in 16 mm. cinematography. We have found a great deal of pleasure in making our own 16 mm. photoplays with our families and friends rather than being satisfied with aimless animated snapshots. But we found that no really complete scenarios were available—so we proceeded to write our own. In them we covered every slightest detail, not satisfying ourselves with mere descriptions of the action, but specifying camera-angles, footage, costumes, properties, and the like. Several of our friends who are also 16 mm. enthusiasts, but not connected with the industry, have used these scripts, and the success that they have had in making their own photoplays in this manner has prompted us to make the scripts available to amateurs elsewhere.

"The scenarios are of two types; short subjects and featurettes. The former require but 100 feet of 16 mm. film; the latter from 300 to 400 feet. Knowing that the average amateur does not have facilities for title-making, we supply a complete set of titles for each picture, photographed on 16 mm. film, on special art-backgrounds, with each script. In addition, to facilitate editing the completed productions, we provide our H.M.S. scene-numbering slate with which to number the scenes, that they need not be photographed in exact sequence.

"We have stories of all natures, to suit every taste, and every degree of technical proficiency. New stories are constantly being added to our list, and we likewise maintain a technical advisory service to aid the amateurs in the solution of all of their problems."

New Zoom Lens

(Continued from page 16)

was called upon to solve an infinite number of problems involving calculus, squares, addition, division and even relativity.

"It would seem that with one accurately generated, mere duplication would suffice to produce a second mechanism. This would be so were all lenses exactly equal to their rated focal lengths. Unfortunately even matched lenses would not answer and it became necessary to develop a vernier compensation for the value of focal length. It is now possible to provide with scientific exactitude at every point for focal variations of less than 1/100 part of a millimeter. This detail places the Durholz lens on a production basis without sacrificing the extreme accuracy aimed for. While in excess of optical requirements this was considered desirable for reasons beyond the scope of the present article. The optical work is in the hands of the outstanding lens makers of the country while the mechanical design is being carried out by a recognized precision shop of New York City. The lens may be fitted to practically every type of camera."

angle, then reflect light on to it with a large mirror out in the sun. There is no end of the combinations that can be used to the advantage of the photographer, and I hope this article has opened new possibilities to you.

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The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. A total of **\$1,000.00 in CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of \$500.00 for what its judges consider the best 16 millimeter picture submitted in this contest. \$250.00 will be given as second prize; \$150.00 as third prize; and \$100.00 as fourth prize, a total of \$1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after

the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9½ millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg., Hollywood, Calif.

Enclosed please find Check, or Money Order, for \$3.00 (\$4.00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year:

Name.....

Address.....

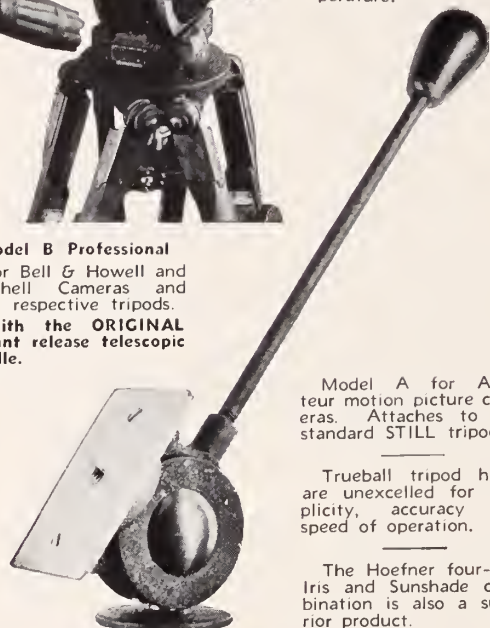
It is understood that this subscription makes me eligible to enter your \$1000.00 Amateur Movie Contest.

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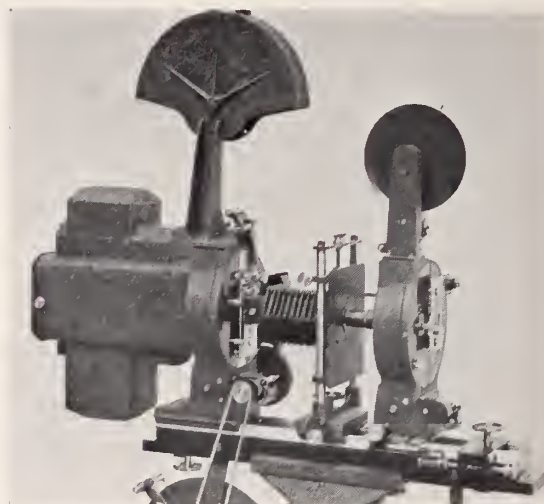
FRED HOEFNER

5319 SANTA MONICA BOULEVARD
GLADSTONE 0243 LOS ANGELES, CALIF.

New Processing Rack for 16 MM.

THE PHILLIPS Laboratories of Westfield, N. J., announce a piece of new equipment this month that should be of interest to amateurs. It is a processing rack which enables the amateur to develop his own pictures.

Step Printer for Amateurs



FOR THOSE serious amateurs who wish to do their own 16 mm. printing, the ARRI optical printer, which may be changed easily to a 35 mm. printer, is of considerable interest. With this printer one may print trick shots, as for instance, the reverse running of a picture.

The printer is motor driven and the motor is mounted upon rubber cushions to eliminate any vibration. This printer may be used to reduce from 35 mm. to 16 mm. as a straight 35 mm. printer, or for printing 16 mm. onto 16 mm. The light control is effected by a separate half-automatic panel-board, which is connected to the reduction printer, using a sliding rheostat for adapting the printing light to the density of the negative. A four-place meter enables the operator to check at any time during the printing process, according to the registered numbers. Altogether, quite an interesting bit of equipment. Fritz Reichel of Hollywood is selling it.

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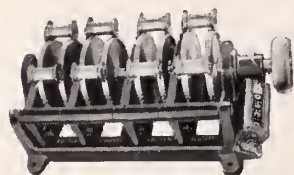
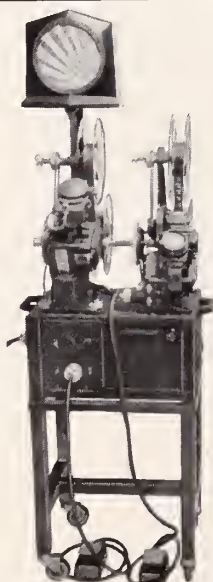
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Movies Record Earthquake Vibrations

HOW a 16 mm. movie camera was employed in the Philippines for making a motion picture record of the needle movements of an instrument constructed for measuring earthquake vibrations, is interestingly told by I. A. Terry of the engineering department of the General Electric Company.

"We are faced with the problem of making a vibrograph for obtaining a graphical record of earth vibrations, and this instrument had to be obtained as quickly as possible, and therefore with the materials available in the Philippine Islands," says Mr. Terry.

"We made an instrument, the vibration mechanism of which was a Starrett dial test indicator held rigidly to the frame. The dial was covered with a dull finished black paper, and the needle was given a high polish on the tip. The glass was replaced by a deeply blackened metal sheet, with a small slit in it, covering an arc of about 20 scale divisions (mils.). A beam of light was focused on the slit from a motion picture projector, with the light beam cut down by means of an aperture in a wooden block between the source of light and the dial test indicator. By this means the slit only of the indicator was illuminated.

"The Filmo moving picture camera was used for recording the needle motion, the indicator being adjusted to such an angle that a perfect reflection of light to the camera from the needle was obtained, with the needle in the center of the slit. The camera was modified to give a continuous, instead of an intermittent, film motion. The plane of the camera was set so that the plunges of the needle would traverse the width of the film."



Telephone Camera Club At Smithsonian Institute

THROUGH the Telephone Camera Club of Washington, D. C., arrangements have been made to exhibit in the Photographic Salon of the National Museum of the Smithsonian Institute during the entire month of March the photographs included in the Telephone Camera Club 1931 exhibition. These pictures were originally exhibited in New York at 140 West Street, the New York Telephone Company Building, from November 30th to December 5th, and in Chicago from December 14th to December 19th, the attendance being 4,000 and 3,000 respectively.

The Telephone Camera Club is a recently organized national association of Bell System Camera Clubs which are composed entirely of amateur photographers within the individual units of the Bell System. Included in its membership are the Telephone Camera Club of Washington, D. C., the Telephone Camera Club of Manhattan, the ERPI Camera Club, the Bronx-Westchester Camera Club, the Blue Bell Camera Club, and the Wekearnyan Camera Club.

The exhibit referred to above also includes a few pictures submitted by the employees of the Western Electric Company at Chicago, and the Pacific Telephone and Telegraph Company at San Francisco. At the conclusion of the Washington exhibit, the pictures will be shown in Detroit, Mich., Kearny, N. J., Brooklyn, N. Y., and Bronx, N. Y.



New Bass Catalogue

THE LATEST Bass Bargaingram has just been received. For prices in keeping with the times and variety of subjects for amateur and professional including new and used 16 mm. cameras, projectors and accessories, with a wonderful listing of text books for photographers, listed in the new Bass Bargaingram No. 208B. This is an interesting booklet. This is the 22nd year of this popular bargain list and you should send for a copy. It is free by writing to the Bass Camera Company, 179 West Madison St., Chicago, Illinois.



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A Practical 16 MM. Matte Box

A PRACTICAL MATTE-BOX, filter-holder and sunshade for 16 mm. cameras has just been announced by Home Movie Scenarios, Inc., of Hollywood. The device enables the amateur cinematographer to use professional filters on any 16 mm. camera, and to obtain effects hitherto unobtainable by amateurs. The device is mounted on the lens, and takes the standard professional 2-inch square filters.



The matte box in use

In conjunction with this matte-box, the manufacturers have announced special sets of professional filters, known as the Harrison-H.M.S. filter sets. These range in completeness and price to meet the needs of amateurs, advanced amateurs, and professionals. The filters included in the various sets include color-filters of the K and G series, red filters for night and moonlight effects, graduated filters, fog filters, diffusers, neutral-density filters, graduated irises, and, in fact, the essentials of a very complete professional filter-outfit, and the device will undoubtedly be of inestimable benefit to amateur cinematographers desirous of obtaining professional results with 16 mm. equipment.

General Electric Announces the New Mazda Photoflood Lamp For Photography

A NEW PHOTOGRAPHIC light source, the Mazda Photoflood lamp, designed especially for amateur motion picture photography and time exposures, has been announced by the Incandescent Lamp Department of General Electric Company at Nela Park, Cleveland, Ohio.

The new lamp, which burns on regular lighting circuits of 105 to 125 volts, resembles the standard 60-watt inside-frosted Mazda lamp in bulb size and appearance. Its extremely high operating efficiency causes its photographic effectiveness to be approximately that of a 750-watt general service lamp and results in comparatively short lamp life—120 minutes at 115 volts. Five lamps fully load one circuit.

The Photoflood lamp makes it possible for the amateur to obviate the costly failures which have attended some of his indoor motion picture photography in the past and will enable him to obtain satisfactory results even with inexpensive cameras. Both amateur and professional photographers will find the Photoflood lamp an ideal source of illumination for time exposures.

For best results the Photoflood lamp should be operated in reflectors designed for photographic service. In the absence of such reflecting equipment, lamps may be used in the regular ceiling fixtures and portable lamps.

With this lamp to complement the Photoflash lamp, which is more suitable for action snapshots, amateur and professional photographers now have at their command light sources that meet the majority of photographic requirements.

Amateur Movie Making

(Continued from page 32)

type of picture. It is always well to open a sequence with a long-shot to thoroughly "plant" the geography of the scene. Thereafter, work progressively closer and closer to the object upon which the interest may be centered, using the various closer shots, and intermediates between them, as the action may permit. Remember that, except in travel or scenic films, the actors are the important things; the closer we see them, the more clearly we show their actions, the easier it is to understand what is going on. Therefore remember that, once the background has been planted in the mind of an audience, it is relatively unimportant, and must be secondary to the actors and their action. Too many closeups, however, tend to slow down the action, so be wise, and use them intelligently.

But camera-angles can do more than merely determine the size of the figures. They can aid in making things look natural—in giving the picture the illusion of depth. For instance, if we are photographing a girl in a light-colored dress, it is obvious that she will stand out more clearly against a dark background than against a light one, and vice-versa.

As Mr. Mamoulian pointed out last month, the angle at which a scene is photographed has a tremendous bearing upon the way the scene will affect an audience. Therefore, before choosing your set-up, consider carefully just how you want your audience to react to the scene.

Another point to consider in choosing camera-angles is the speed of movement of the objects to be photographed. The average 16mm. camera has a shutter-speed equivalent to 1/32 second. This is not nearly fast enough to "stop" fast moving objects, and give an unblurred picture of them. Therefore, we must take refuge in camera-angles. Instead, then, of photographing fast-moving objects such as races, airplanes, and the like from angles that make them move directly across the field, we must photograph them from angles that make them move either directly or diagonally into the picture. The faster they move, the more nearly head-on we must photograph them, or, if we cannot do this, the farther away from them we must go. And when we can photograph such subjects from the diagonal angles, they should always be coming into the picture—never going out of it.

Honor French Film Men

THE LEGION D'HONNEUR has been bestowed upon three more men who are prominent members of the film industry in France—Charles Jourjon, owner of the Tobis studios at Epinay; Felix Silly, and Paul Montel, director of the Technical Cinematographic School in Paris.

U. S. C. to Produce Film

A MOTION PICTURE based on early Mexican history entitled "Montezuma's Daughter" is to be developed this spring as a "project" of a recently-organized experimental cinema laboratory of the University of Southern California. It will be in charge of Dr. Boris V. Morkovin, a member of the

16mm. Contestants Attention

Professional Cinematographers Positively Barred . . . BUT

here's a tip to contestants . . . make your 16 mm. efforts rival professional 35 mm. standard production. 1st, choose good equipment. 2nd, a subject of perfect facial photographic qualities.

3rd, Panchromatic film AND

PANCROSCOPIC "SILVERLEAF" REFLECTORS (for your exteriors)

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advisory board of the National Committee for the Study of Social Values in Motion Pictures established by the Payne Foundation of New York.

Prof. Morkovin has been lecturing on the social and psychological aspects of the films at University College of S. C. for two years, stressing the scientific, educational, historical, and artistic possibilities of motion pictures.

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Portland Cine Club Activities

UNDER the able leadership of E. J. Schon, the Portland Cine Club, of Portland, Oregon, is making rapid cinematic strides. At present the club is centering activities upon the production of an Oregon scenic film which will not only give the members an opportunity to show their cinematic ability, but will boost the state as well. If this film is completed in time it will probably be entered in the Amateur Movie Making contest of the American Cinematographer.

The Club met in the Tyrolean Room of the Benson Hotel. Among the features of the evening was Captain Frank Irwin of the Portland Police Department with his film showing how NOT to drive while intoxicated, etc. The club now numbers nearly one hundred members, and a concerted drive is on to bring the number well over a hundred.

Laboratory Department

(Continued from page 28)

The current flowing through the filament of the standard lamp is controlled by the rheostat and its value is indicated by the ammeter. A volt meter is also provided in order to detect any lamp deterioration which might affect the constancy of results in precision work.

The lamp for positive film is standardized for candlepower when operating at a color temperature of 2600°K. Since this quality of illumination is probably somewhat yellower than that used on the average in the practical exposure of positive film, a selectively absorbing filter is provided which raises the color temperature and the radiation incident on the exposure plane to approximately 3000°K. The lamp for exposing negative film is standardized for candlepower at 2360°K. and with this lamp is used another filter which raises the color temperature of the radiation incident on the exposure plane to approximately 5400°K. (mean daylight).

The exposure drum which controls the time factor of the exposure, to which the various areas of the photographic material is subjected, consists of a thin sheet of metal cylindrical in form, one end of which is mounted on and supported by a heavy cast iron wheel fixed directly upon the shaft of the reducing gears. In this cylinder are cut a series of 21 openings, each 10 mm. wide, the narrowest of which has a length as measured upon the circumference of the cylinder of 1 mm., while the longest has a length of 1024 mm. The length of these openings form a logarithmic series, each one being the square root of two times as long as the adjacent shorter one.

The sensitometer is designed for operation on an alternating current line of approximately 110 volts, either 50 or 60 cycles. If the line voltage is unsteady, it is desirable to use some form of voltage regulator, which addition can be obtained at relatively little increased cost.

The actual operation of the instrument consists first of inserting and connecting the proper lamp. The lamp switch is then thrown on after having made proper precaution that the proper filter for that lamp is inserted in the filter holder.

The main switch of the instrument is then turned to the ON position.

The lamp current is set at the calibrated value by adjustment of the rheostat knob.

After the lamp has reached a steady value of current and no further adjustment is necessary, the film is inserted into the exposure slot and the platen is pressed down on the film until it locks. The release button is then pressed.

The completion of the exposure is indicated by a bell signal.

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Former Cameraman Opens Photographic Store in Westwood Village

HATTO TAPPENBECK, A.S.C., for many years engaged in the cinematographic profession in Hollywood, has deserted the motion picture industry and, together with H. F. Culver, has opened a photographic supply store and laboratories in Westwood Village, California.

The new concern, situated near the campus of the University of California at Los Angeles, will cater especially to the wants of the amateur movie makers and the amateur still photographers, as well as offering commercial photographic service. A complete line of Bell & Howell and Eastman equipment is being handled by the new firm which is located at 10958 Weyburn Avenue. A projection room, cutting room, dark room and reading room are provided for all patrons.

Who Said "Depression"!

IN A NATION-WIDE contest, participated in by thousands of the country's largest organizations, and sponsored by the General Electric Co., our own Motion Picture Trade received very favorable recognition.

In the sales campaign, which was not limited to any particular field, several of the Industry's better known factors were up near the top. Results were based upon the increase in sales for the last quarter of 1931, as compared to the same period in 1930. As an indication of the general trend of business, the reports shown were quite encouraging.

In the Metropolitan District, the outstanding leader and winner of the grand prize in that division, was the S. O. S. Corp., of 1600 Broadway, New York. This company showed the astounding gain of over 400% in their business done during the Contest. The Officials of this progressive concern feel highly elated, for it reflects the great efforts which they have been making during the past year of depression.

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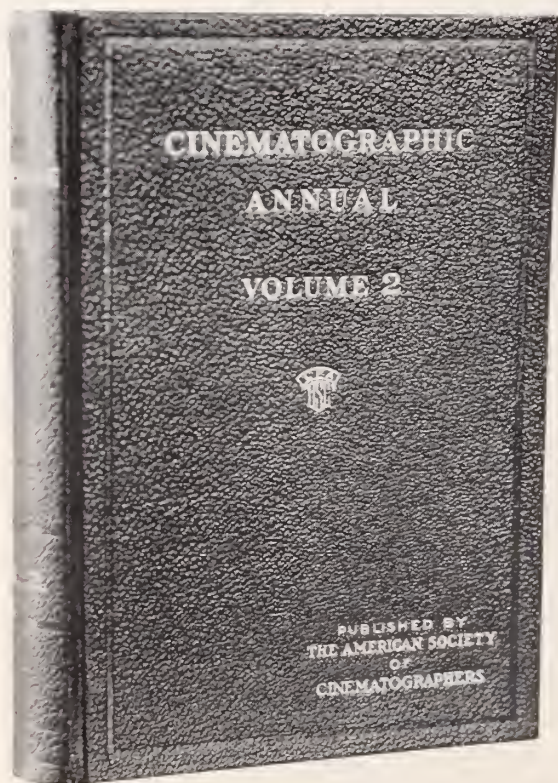
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64 Page Pictorial Section

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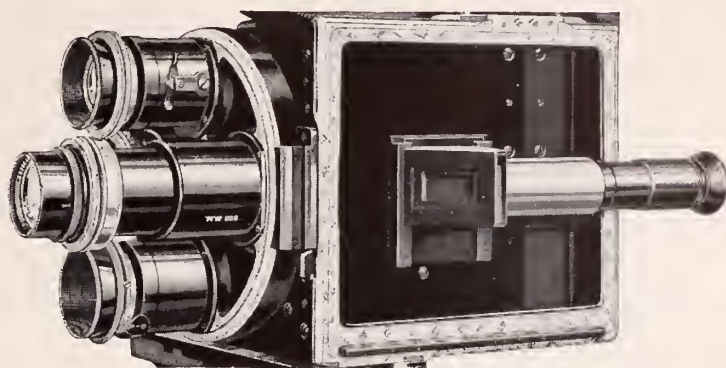
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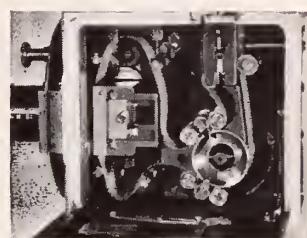
• Newsreel men can now save precious seconds by focusing through the aperture of the Bell & Howell silenced Unit I pilot pin intermittent mechanism. With the camera in a blimp, preventing rotation of the turret, the combination of the silenced Unit I and the aperture focusing attachment greatly facilitates quick and accurate setting up for a shot.

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*Exterior view of B&H Camera,
equipped for aperture focusing,
showing adjustable 5X and 10X
magnifier*



*Right—Interior of camera show-
ing focusing prism set in pilot pin
intermittent mechanism*

accurate, and satisfactory arrangement that has already met with enthusiastic approval.

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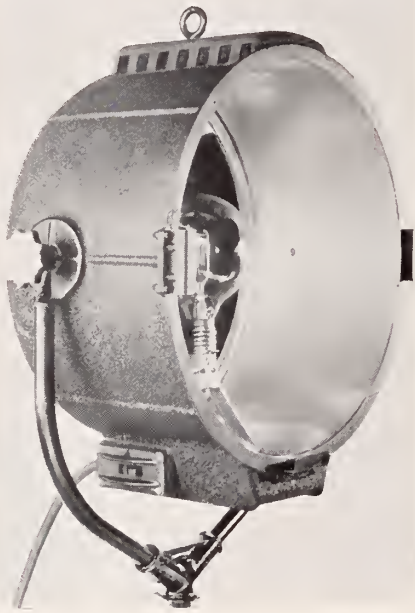


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A P R I L , 1 9 3 2

Number 12

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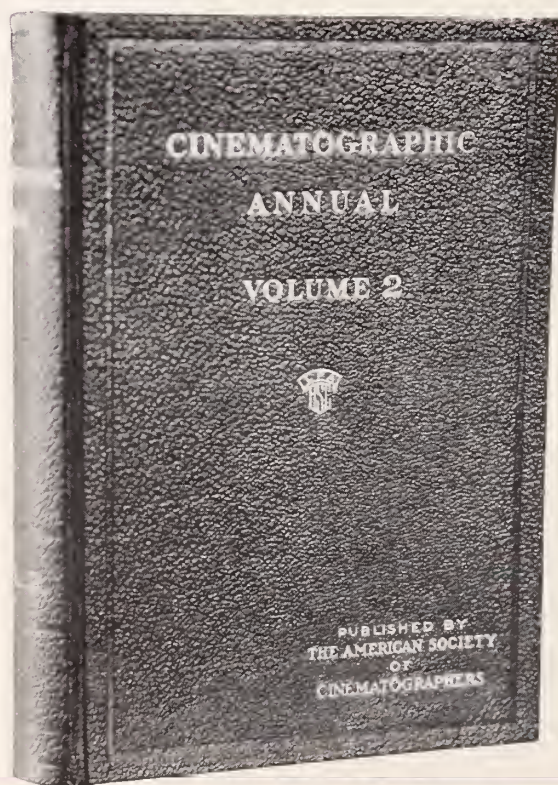
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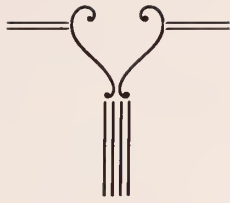
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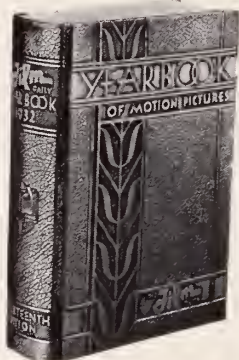
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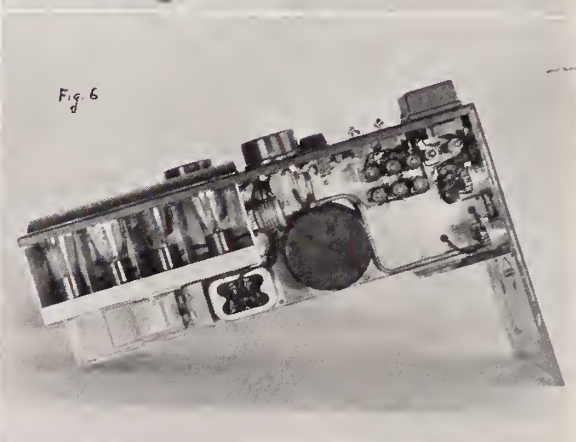
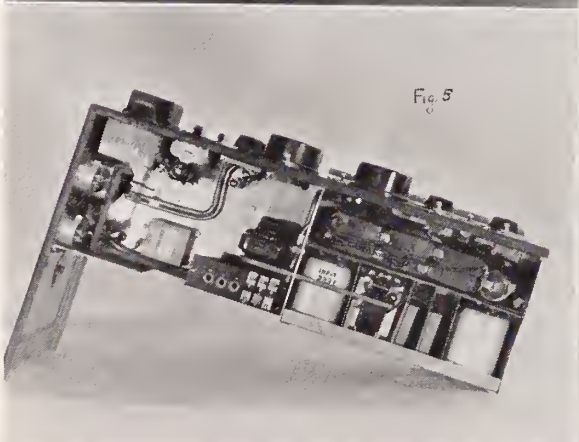
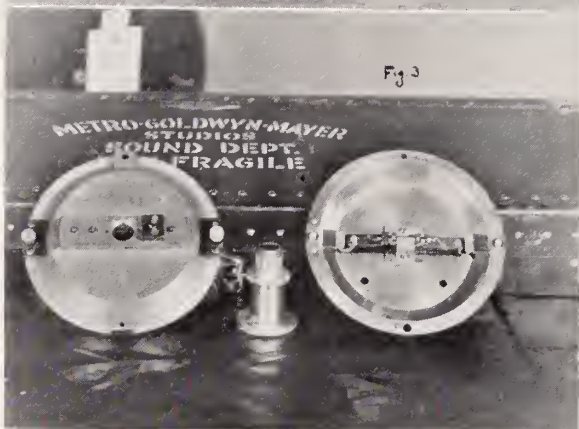
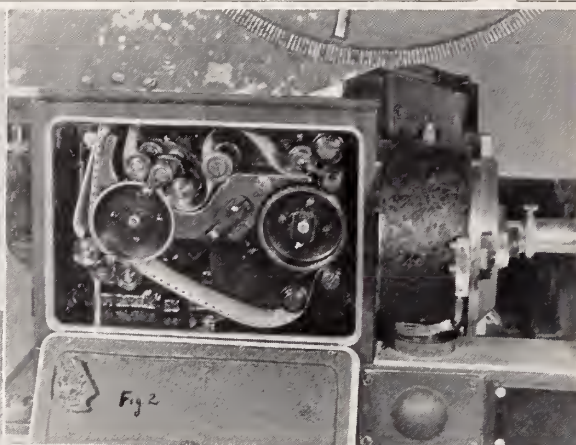
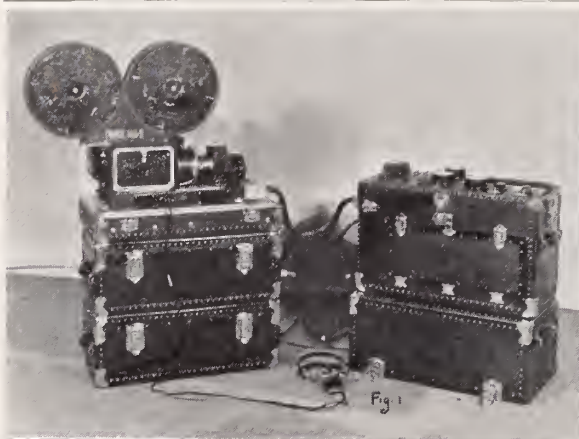


Fig. 1. Recorder arranged for operation. Fig. 2. Details of film compartment. Fig. 3. The light valve. Fig. 4. The combined mixer and amplifier removed from case. Fig. 5 and 6. Show interior construction of the unit.

The M-G-M Portable Recording Outfit

by **WESLEY C. MILLER**

Chief Engineer, Sound Department, Metro-Goldwyn-Mayer Studios

THE need for completely portable sound recording apparatus has been felt since the beginning of commercial sound recording. The first step in this direction was to mount standard studio apparatus in somewhat abbreviated form in a truck, which served both for transportation and as an operating room for the apparatus. The arrangement, at best, was cumbersome, and was definitely incapable of being used in many places where recording was desired. A modification of the truck form involved the mounting of the various units in semi-portable carrying cases, which were normally mounted in a truck for transportation, but which could be removed and set up at a location quite removed from the truck. Inasmuch, however, as these units used the same recording apparatus as that formerly mounted in the trucks themselves, the total weight and complication were very slightly reduced.

Increased production requirements and demands prompted an effort by the M-G-M Studio organization to design and construct a truly portable apparatus. The general requirements imposed upon this design were as follows

1. Quality of recording.

Production of results at least equivalent to a standard stationary channel.

2. Extreme portability.

This implies a minimum total weight and a maximum weight for each unit such that it may be handled by one man.

3. Ability to operate for a considerable period without return to a base.

This is accepted to be a matter of several hours continuous shooting without recharging batteries, but implying the possibility of remaining away from the base for several days, or longer, by employing a portable battery charging device.

4. Provision of driving power for at least two cameras.

5. Use of separate negatives for picture and sound.

6. Suitable speed control, and means of synchronizing sound and picture.

7. Rigid construction to permit of shipment and rough handling.

With these requirements in mind, a recording outfit has been developed which not only meets the requirements, but appears to be the most satisfactory production unit of its kind which has thus far been made available. The complete outfit consists of the following units:

1. Recording machine. (Weight 96 lbs.)

2. Mixer and amplifier. (Weight 90 lbs.)

Contains B batteries and spare vacuum tubes.

3. Main battery supply. (Weight 90 lbs. per box, total 180 lbs.)

Consists of two boxes, each containing 60 volts of 12 ampere-hour, airplane type storage batteries.

4. Microphone and cable unit. (Weight 73 lbs.)

Contains one microphone complete, and 250 ft. of cable, in various sections, which may be used interchangeably for motors or microphone.

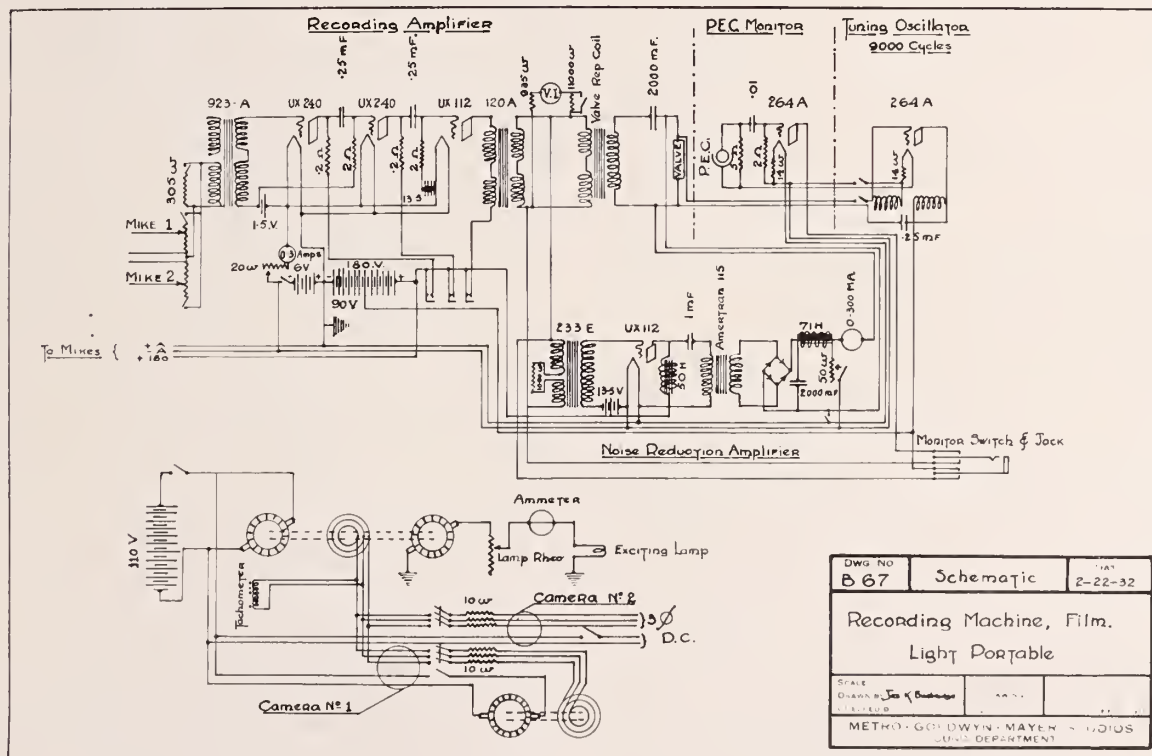


Fig. 7. Schematic drawing of the portable recorder.

5. Magazine case. (Weight, loaded, 58 lbs.)

Contains three 1000 ft. magazines.

All necessary spare parts, replacements and tools are mounted in special compartments in various parts of the equipment. These include extra valves, microphone condensers, oil, tubes, exciting lamps, etc.

The total weight of the combined units is 498 lbs., which represents the sum of the individual weights given in connection with each unit above, although the total weight of the actual operating units (Nos. 1, 2 and 3 above) is but 366 lbs.

The accompanying illustration, Fig. 1, shows the arrangement of the apparatus for operation. The plan dimensions of each box are identical, with the exception of the recorder box, which is slightly wider than the others; and they are arranged for stacking, which sets both recorder and amplifier off the ground and at a suitable height for operation by a man sitting on a chair or on one of the covers. The heavy units are placed at the bottom, thus lending stability to the arrangement.

The boxes are made along the general lines of trunk construction; that is, of fibre and ply-wood, with protective corner pieces, and trunk-type latches on the covers. Metal feet are provided to take the burden of normal sliding, and also to hold the units together when stacked for operation.

Recording Machine

Fig. 2 shows the details of the film compartment in the recording machine. The movement consists of two sprockets rotating at 180 R.P.M. (clockwise in the illustration) one for driving purposes, and the other for recording. The motion and control of the film between the driving sprocket and the recording sprocket, both on the entering side and the leaving side, has been worked out in such a manner that clear loops are maintained to completely isolate the recording sprocket from all fluctuations which occur in the driving sprocket. The mechanism for obtaining this condition may be seen by a reference to the figure. The method is a combination of the various elements used in certain types of recording machines now in existence, and has been proven by test to be at least equivalent to the best movements which the writer has thus far observed.

Both sprockets are driven from a worm and gear combination, which in turn is operated by the driving motor, operating at 2880 R.P.M. The drive to the driving sprocket is direct from the worm gear, whereas the drive to the recording sprocket is through a damped spring-driven fly-wheel, provided with a bearing on either side. This filter combination serves to minimize the effects of irregularities in the worm and gear, and also to control any influence which the film loops might have upon the operation of the recording sprocket. Arrangement is made on the door of the film compartment to insure that all control handles and levers on the film rollers are in their proper places before starting the machine.

The light valve, as shown in Fig. 3, is identical in principle with the standard single ribbon type used in the studio, although it differs in form to provide for the particular requirements which this recorder and portable use impose. The single ribbon is held in place at either end by two screws which serve as bridges, and also to maintain the ribbon spacing. The tension is taken at one end by the solid mounting block; and at the other, by an adjustable, spring-mounted lever, to permit of tuning. This ribbon forms one side of the exposure aperture, and a fixed straight edge provides the other. The plane of the ribbon is about .002 inch away from the plane of the straight edge, so that in case of overloads, the ribbon passes over the straight edge. No damping is provided at present, although this may be readily installed if desired. This model of valve overloads at 4.0 db above a 10 milliwatt zero level. The magnet assembly is cylindrical in form; the windings being in two sections, with a space between to provide for split-beam P.E.C. monitoring. When the valve is in position on the magnet, the entire valve assembly is completely dust-

proof. To facilitate handling, the screws which serve to hold the valve in place are also used as its connections to the circuit.

The optical assembly consists of a condensing lens, which mounts directly on the back of the valve plate, and an objective lens, which is mounted permanently on the machine. The optical axis is horizontal, and intercepts the recording sprocket exactly in line with the center of the latter. The light source is a standard 9 ampere ribbon filament lamp, mounted in a readily adjustable holder, to enable the lamp to be properly focussed.

Photoelectric cell monitoring is provided by means of a split mirror, mounted inside the magnet assembly, which intercepts a portion of the light beam from the valve, and reflects it at right angles into a photoelectric cell mounted in the base of the machine. The output from this cell is led into a single stage amplifier, which is mounted inside the base of the machine.

At one end of the machine is a small tuning oscillator, adjusted to a single frequency of 9000 cycles. The method of use of this oscillator in tuning is discussed below.

The machine uses standard Mitchell, 1000 ft. film magazines, with a slight modification made necessary by the fact that the magazine may be placed upon the machine in either position, to permit of making two sound tracks on a single film if desired. This involves adding a lip at one end of the mounting plate, and changing the position of the seat for the lock screw. The take-up for the magazine is driven directly from the driving sprocket shaft, which also drives a footage counter. The film compartment contains an anti-buckle device, which shuts off the power to the machine instantly, in case of a failure to operate on the part of the magazine or of the recorder.

Mixer and Amplifier

Fig. 4 shows the combined mixer and amplifier box removed from its box; and Figs. 5 and 6 show the interior construction of the unit. A schematic diagram of the connections is given in Fig. 7. The apparatus provides for the use of two microphone circuits, each having an individual mixer control potentiometer connected to a 3-stage recording amplifier, volume indicator and noise reduction apparatus. The control apparatus for motor supply and regulation is also in this case, comprising a field rheostat, a vibrating reed type tachometer, and the necessary starting and interlock switches.

All of the various circuits terminate in jacks on a panel at one end, for connections to other units and other parts of the circuit. The large rectangular jack, having fourteen connections, serves to connect the amplifier unit to the recording machine, and carries input to the valve, filament, and plate supply; and also carries the necessary leads for the driving motor. Of the other small, cylindrical jacks, two are used for microphones, two for cameras, one as a spare, and one for connection to the battery supply unit. A compartment at the bottom of the panel is used for spare vacuum tubes.

The mixer positions are simple potentiometers, either of which may be used alone; or, if one is short-circuited, the two potentiometers operate in tandem with each other, to give an additional control for a single microphone. The volume indicator is the General Radio copper oxide-lead rectifier type. It is located immediately beside the mixer dials, but appears electrically at the output of the recording amplifier, ahead of the valve repeating coil.

The amplifier is a 3-stage resistance coupled unit, having a total gain of approximately 77 db, and an undistorted power output of approximately 12 db above a zero level of 10 milliwatts, which is 8 db above the valve overload level. The characteristic of the amplifier is flat, within 1 db from 35 cycles to 10,000 cycles; and the voice quality obtained from the amplifier is excellent. Both direct and P.E.C. monitoring are provided in head phones plugged into the recorder base, with a key to transfer from direct to P.E.C. monitor.

(Continued on Page 22)

The Reversible Process

by **DR. W. RAHTS** and **DR. F. O. SCHULZ**

Translated by Dr. Herbert Meyer
Technical Division of Agfa Raw Film Corporation, Hollywood, California

(Continued from Last Month.)

IN CONTINUING this resume of the reversible process from the March issue of "The American Cinematographer," it will be necessary to refer to page 22 of last month's issue in the consideration of figure 2.

As was stated in the previous issue, it is comparatively simple to obtain excellent quality with reversible film when the correct exposure is used, and the contrast ratio of the subject being photographed is not beyond the latitude of the film. The difficulties encountered in reversible processes are particularly paramount in attempting to correct over and under-exposure.

There are, however, several methods by which to correct under and over-exposure. The first method consists of varying the developing time in the first developer, to which is added suitable solvents for the silver bromide.

As will be seen in figure 2 of the previous article, there will not be considerable change in the threshold speed by increasing the developing time. It will be noted that with each of the different time curves, the start of the straight line portion at the upper left is lying on the same ordinate.

With this example, it requires six minutes in the first developer to obtain clear high-lights. However, the highest densities are still rather too dark, reaching a density of 2.8.

By increasing the developing time, the maximum densities decrease simultaneously. The lower end of the curve shifts to the left, thus automatically limiting the exposure range or latitude. The curves in this instance slightly soften.

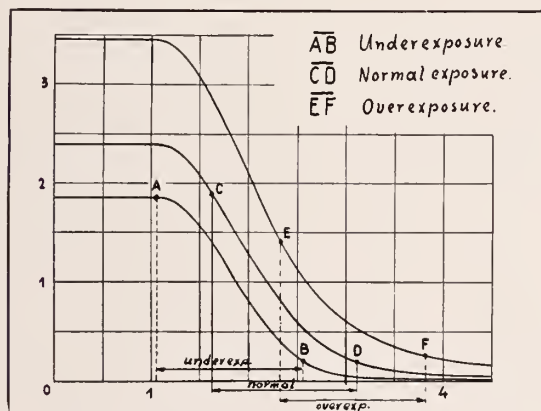


Figure 2a

Agfa Reversible Film
Correction of erroneous exposure by development

As it will be readily noted, there are some possibilities for correcting wrong exposure by this method, which, however, have certain limitations, depending upon the degree of sacrifice in fog and maximum density.

Referring to figure 2a, this method should allow for a correction in the range of 1 to 16.

The curves in figure 2a have been accomplished by reading sensitometric strips, which were exposed through a density wedge and subsequently being developed in the first developer with silver bromide solvents added for a time of 4, 8, and 12 minutes after which they were bleached and redeveloped to infinity. The object to be considered covered an exposure range of 1.5, which is marked in figure 2a three times on the horizontal axis as follows:

- 1) under-exposure A—B with exposure range from 1.1 to 2.6.
- 2) normal exposure C—D with exposure range from 1.7 to 3.2.
- 3) over-exposure E—F with exposure range from 2.3 to 3.8.

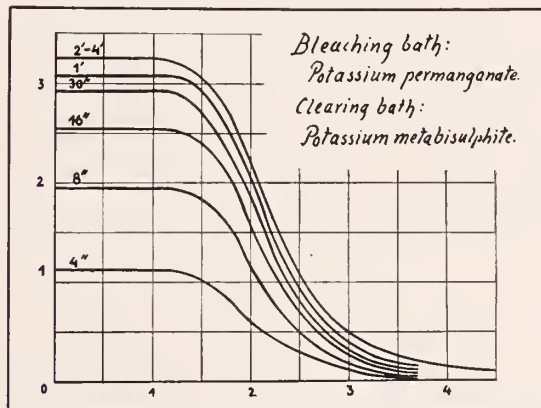


Figure 3

Agfa Reversible Film
Different exposures before second development

The ordinates belonging to each of these points marked on the log exposure axis, determine on the corresponding curves the density range of the reversed positive image.

The ordinates for the normal exposure C—D enclose a section on the 8 minute curve, which fulfills all requirements for good projection quality, i.e. clear high-lights, proper shadows and suitable contrast in all densities.

It will be noted on the 8 minute curve, which is considered the normal curve for normal exposure, that the part E—F being over-exposed will be inadequate in the positive print as the high-lights will lack definition being too transparent and as the maximum density in this portion is below 1.0 with the result that the shadows will be too light and gray.

On the other hand, the under-exposed part A—B would show on the 8 minute curve densities too high throughout as the high-lights will be covered and the shadows entirely too opaque.

Both under- and over-exposure, however, can be corrected by varying development in the first developer containing silver bromide solvents to the extent that it will be possible to still obtain satisfactory projection quality with suitable density gradation.

The over-exposed part E—F for example, shows a density range on the 4 minute curve, which, while not quite equivalent to that of the normal part on the 8 minute curve, still represents good picture quality.

The high-lights are not quite clear, but the shadows will be sufficient in density. Over-exposure therefore may be satisfactory on the 4 minute curve although the picture quality will appear rather soft.

In a similar way, the under-exposed part A—B may be corrected by increasing the time of development, which causes a decrease of the general positive density, due to the prolonged application of the silver bromide solvents in the first developer.

In considering the 12 minute curve, it will be noted that the under-exposed part A—B has a maximum density of 1.8 with clear high-lights. The lighter shades will also be satisfactory.

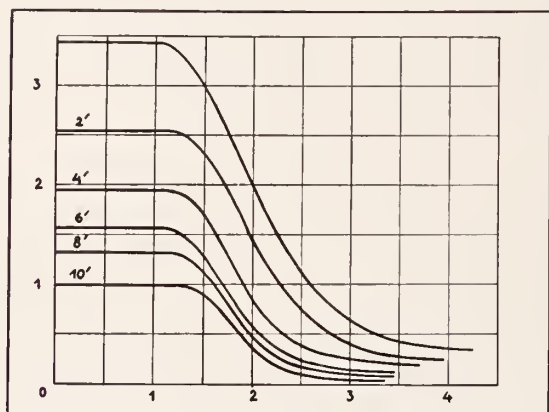


Figure 4

Agfa Reversible Film
treated for different length of time in a 10% thiosulphate solution
before second exposure

To sum up the foregoing statements, the variations obtained from changing developing time of the first developer in the reversible process allow for certain definite corrections of errors in exposure.

Furthermore, it will be seen from figure 2a that considering a range of contrast of 1.5 in the object, the exposures in accordance with the application of the corrective developing method have a value of 1.1 to 2.6 for under-exposure, and 2.3 to 3.8 for over-exposure on the log exposure axis. The difference in these values is equal to 1.2, so that the latitude of the exposure in this case is in the relation of 16 to 1.

A second method for correcting under- and over-exposure consists in regulating the second exposure, that is to say, after the first development the unexposed silver-halide is exposed to a light source, the exposure value of which is controlled in accordance with the required density which is pre-determined after the first development is completed.

Considering an under-exposure and normal development, it is evident that a very large part of the silver-halide will remain undeveloped as where there is no exposure, the sensitive emulsion will be unaffected. It also will remain intact as the negative image is bleached and dissolved away in the bleaching bath, this, of course, is due to the characteristic of the bleach, which only affects the silver which has been reduced to metallic state during development. By controlling the second exposure of the unaffected sensitive emulsion, only that portion of the silver-halide which has been exposed by the second exposure, will be developed in the final development and that portion of the remaining silver-halide, which has not been

affected by the second exposure and development will be carried away in the subsequent fixing bath. Thus the maximum density, which in the event of being too high, may be decreased or increased as the case may require.

To obtain the greatest latitude by this method, the time of development in the first developer should be as short as possible in order to avoid reducing any excess of the silver-halide which after reduction, would naturally be dissolved away by the bleaching bath.

Figure 3 represents reversed curves of Agfa reversible film, where the time of the first development has been reduced to five minutes, and the second exposure has been varied from 4 seconds up to 4 minutes. However, the limitations involved in the application of this method are similar to those mentioned in the description of the previous method, thus limiting the correction to the possible coherent differences in exposure in the relation of 1 to 16.

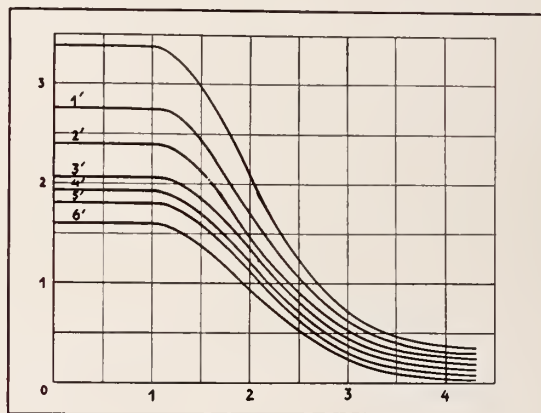


Figure 5

Agfa Reversible Film
treated for different length of time in a Potassium Permanganate
reducer after completion of the reversal process

A further method of correcting erroneous exposure is based on the reaction of a sodium thiosulphate solution (hypo) in dissolving the silver halide. This solution is applied between the bleaching and the secondary exposure (figure 4) where also the first development was maintained as short as possible. The greater the under-exposed portion, the lesser silver halide will be dissolved in the bleaching bath and thus correspondingly the more silver halide may be dissolved in the hypo solution later.

It will be noted also in figure 4 this method does not give as clear high-lights as the two methods mentioned previously.

A fourth method deals with the process in which after completion of the entire reversal the positive metallic silver image is reduced to the desired density with a suitable reducing agent, such as a potassium permanganate reducer.

It is evident from figure 5 that this method is quite inferior in comparison to the previously described methods. Other methods mentioned in photographic literature have been of little consequence up to the present time, even though they may show exceptional quality for a specific use.

In conclusion, the reversal process may be considered very satisfactory regarding results from normal exposure and normal objects. However, it is necessary to say that the working latitude of the reversal processes is quite limited considering the adaptability in different exposure ranges in the object being photographed as is extremely brilliant highlights and deep shadows as well as the possibilities of correcting exposure errors.

Glow-lamp Noiseless Recording

by E. H. HANSEN

UNDER normal conditions unmodulated sound track has a noise ratio, depending mainly on the amount of transient opacities interspread on the track. The levels of these transients vary as the ratio of the density of the unmodulated track to the transients, as represented on the print by dirt, scratches, oil, wax, etc. It being beyond the ability of any electrical circuit to discriminate between desired signal and acoustic back-ground noise, it is apparent that no effective results can be obtained in the elimination of acoustical noises. This paper describes the general principles of surface noise reduction as applied to recording glow-lamps. The circuits and film data represented are classical rather than those in use or applied by any producing company using this type of recording.

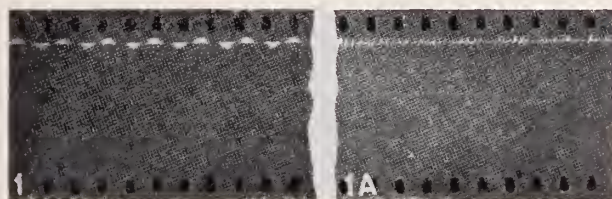


Fig. 1.

The first requirement in the making of a film record is that the fidelity of the density indicated on the print does not noticeably deviate in relationship from the applied sound pressure on the microphone diaphragm.

In considering the design of noise reduction circuits, whether they be intended for application with variable density or variable area, the work to be accomplished is the same in both instances, i.e. that for such periods of no modulation extreme opacity will be interposed between the light beam and the photocell of the projector.

It might be well at this point to consider what constitutes an ideal sound-track with regard to the elimination of surface noise as represented on the film. Obviously, a sound-track, wherein the speech signal is totally transparent and is surrounded by complete opaqueness, will constitute an ideal track. Such a track is shown in Fig. 1, and is a record made of a 50-cycle wave. It will be noticed that this negative track is opaque in portions of the track occupied by the signal and is completely transparent in the unused area. It will be noticed that the signal does not modulate a carrier exposure such as used in variable area records. It will also be observed that the positive half of the cycle lies above an imaginary center line and the negative half lies below this point. A print from this negative track will reverse the conditions and give us a signal that is transparent with a surrounding area completely opaque. Such a track is inherently noiseless and is made without the use of secondary exposure control devices.

Methods of Noise Reduction

Although the example is of the variable area type, such a principle is equally applicable to variable density. Such a negative variable density track would have exposure only during the signal period, reverting to clear transmission at all other times. The above ideal is varied in general practice by an attempt to provide the maximum opacity around the speech envelope in the print, rather than an attempt to fill in between every cycle

or component thereof. In the variable area method two devices have been employed, one wherein the center line is varied, and the other where the center line remains in its usual position in the sound track, and then a secondary exposure surrounds the speech envelope.

In the variable density method the unmodulated exposure is varied according to the strength of the speech signal, and ranges from the normal density of the unmodulated track when fully modulated to the maximum density for the weakest speech signal. The above conditions apply naturally to the print.

Although it is possible to make variable area records with a glow-tube by actually photographing the expansion and contraction of the glow itself, the usual type of recording with the glow tube is of a variable density character.

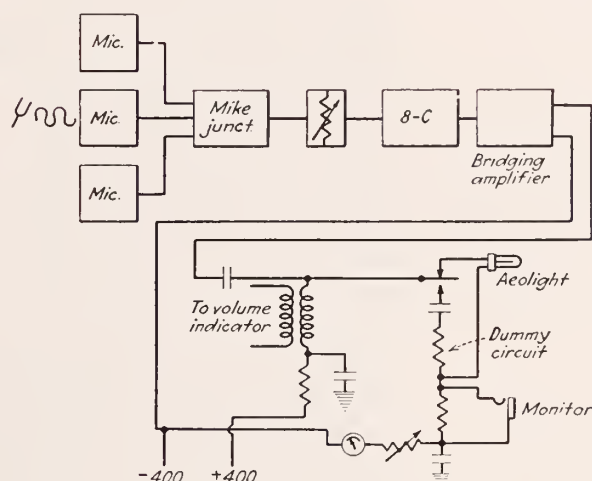


Fig. 2.

Figure 2, shows a typical glow-lamp recording circuit and consists of microphone pickup, control for same, a main amplifier having a gain of approximately 80 to 100 db., and then depending upon the number of recording cameras used, bridging amplifiers connected to the glow lamp control circuits, the usual glow-lamp control circuit consisting of a voltage supply connected to the glow-lamp through a control and ballast resistor, and a coupling condenser to the speech circuits which modulate this direct current flowing through the glow lamp. Additional means are provided for monitoring and also a dummy circuit so that the volume indicator will read correctly during such periods as it is desired to conserve the glow-lamp.

Operating Characteristics of the Lamp

In operation the value of a d.c. current flowing through the glow-lamp is determined by the light efficiency of the glow lamp with respect to the film emulsion characteristics. This value is chosen so that the unmodulated transmission will fall midway on that portion of the film characteristic to be used.

Either "toe" or "straight line" characteristics may be used in processing film for glow-lamp recording. Both methods of processing are possible and have proportional linear characteristics, otherwise they would be unusable, due to the loss of fidelity.

In general, the quality and quantity of light emitted by a glow discharge tube depends upon the electrode spacing, the type of gas, the pressure of gas, and the applied potential. From life and operating requirements it is usual to excite the glow lamp below maximum output. While this amount of light, when using positive emulsion, falls below that required for straight line **H** and **D** recording, it is more than ample for toe processing. When straight line **H** and **D** characteristics are desirable, it is usual to use a film having greater speed. In the last few months, so-called composite stocks have been developed by the film companies wherein the speed lies between that of the positive and negative emulsions, and is ample for straight line recording with glow discharge tubes. Negative stocks, such as orthochromatic, panchromatic and super-panchromatic, are capable of giving perfect straight line records with low light intensities. With the super-speed films, such as super-panchromatic, it is possible to work with very limited amounts of light and to fully modulate over the straight line **H** and **D** portion of the film.

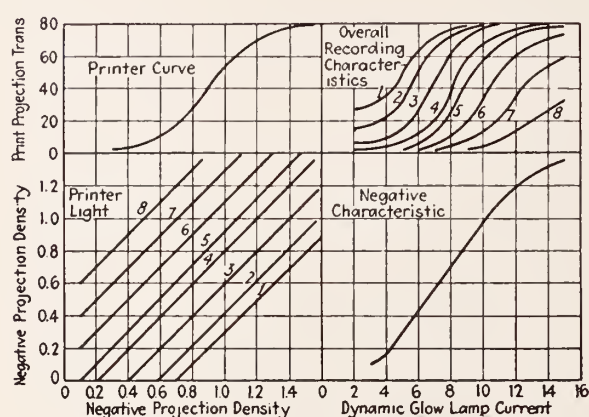


Fig. 3—Characteristic curves for exposures and processing with positive stock using glow-lamps for recording

The question of cost, however, must be considered. In the major studios, where from 50 to 75 productions a year are to be made, it is roughly estimated that approximately one hundred thousand feet of sound negative will be required per production for recording. In the case of the 50 production per year company, five million feet of sound negative are required. The price differential between positive and negative stocks is in the ratio of four to one. There is also an advantage in the use of positive stocks, due to their lower speed having greater stability and ease of handling, and this, in addition to the yearly saving, makes it desirable to employ that type of emulsion.

In the making of studio productions, it is common practice to use the double system of photography and recording, that is, a separate sound and separate picture negative. In the case of a single system, such as employed in newsreels, wherein sound is simultaneously recorded with the picture, the question of emulsion is necessarily determined by the photographic requirements. This usually calls for the panchromatic and super-panchromatic types. The requirements of photographic processing determine that of sound, and is necessarily straight line.

Referring again to the common practice in studio production work, positive stock is utilized generally, necessitating the toe method of processing when using glow-lamps for recording. The characteristic curves of such exposures and processing are shown in Fig. 3. The lower right-hand quadrant shows the negative characteristics of dynamic glow-lamp current plotted against negative projection density. The lower left-hand quadrant represents printer points, and the upper left-hand quadrant shows the characteristic of the printer curve

having the negative projection density plotted against the print transmission. The upper right-hand quadrant shows the overall recording characteristics, and this should be chosen so that the original requirement of proportionality is carried out. In normal toe practice a print having an unmodulated transmission of between 40 and 45 per cent is specified.

Operating Limits For Film Exposure

The design and operation of biasing circuits, in connection with glow-lamp recording, depends upon the film characteristics to be utilized. It is obvious that the increase of opacity in the negative must not be carried beyond a point where there is film curvature. An examination of the negative characteristic in Fig. 3 shows that the straight line region extends from approximately 65 per cent transmission to 15 per cent trans-

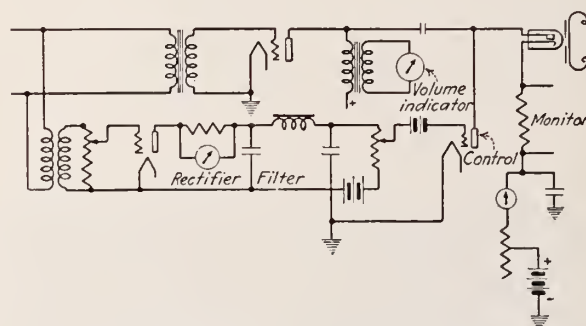


Fig. 4—Modification of circuit in Fig. 2 to meet special requirements of the biasing circuit

mission. In practice then we would place the unmodulated exposure half way between these peak limits, or approximately 40 per cent. At this point we can swing the film transmission with our signal 50 per cent without incurring noticeable deterioration of fidelity. This representing our highest modulating level, it is now necessary to pick a point further down the scale where a minimum signal will not overswing into the curved region of the emulsion. Allowing 10 per cent for this minimum swing, we pick a point wherein the unmodulated transmission for this value of signal will be 20 per cent. This minimum operating point, allowing a swing of 5 per cent plus or minus, is well within the safety zone and permits sounds of increasing intensity and flat wave front to be recorded without distortion. This is necessary due to a characteristic of the biasing circuit, which will be pointed out later, wherein a requirement of time for operation is essential.

It is now necessary that we change our fundamental circuit, as shown in Fig. 2, to one similar to Fig. 4, the requirement of our biasing circuit being that for a minimum signal transmission of approximately 20 per cent unmodulated value shall be increased to a transmission of 40 per cent for our fully modulated signal. It is, therefore, necessary to make the control of the d.c. current flowing through the glow-lamp automatic and vary with the strength of the impressed speech signal. In Fig. 4, the d.c. path through the glow-lamp is controlled by the plate filament resistance of the control tube which is in series to ground. This control tube in turn has its grid potential varied by the output of a rectifier tube, and this rectifier tube in turn is energized by diverting a part of the speech current used to modulate the glow lamp.

It is possible upon the proper calibration of such a circuit, to vary the impedance in the glow lamp circuit in such a way as to change the d.c. component in accordance with the speech level impressed upon this circuit. It is necessary that means be provided so that the control tube will not modulate the d.c. component in accordance with low frequency speech currents. This is provided for in the filter timing circuit between

(Continued on Page 37)

A Great Man Passes On



GEORGE EASTMAN is dead. And with his passing the world lost one of its greatest men. There will always be great men, but George Eastman can never be replaced. A genius in his line, he did more for the photographic art than any other single man, but he never boasted of what he had accomplished. He was not that kind. The motion picture industry could never repay him for the advancement he made possible in that field. But, it is not necessary to speak further of his work; the world knows of it.

He was a kindly man who was always thinking of some way to make better and happier the lot of his fellow men. He gave millions to schools, colleges, for the support of scientific institutions that would improve the condition of mankind. What more could a man do? He was one of the most beloved Honorary Members of the American Society of Cinematographers, and his death takes from this society a man who was ever an inspiration to all its members, each of whom sincerely hopes that he will find in the great beyond that rest and happiness which he deserves.



A group of interesting pictures Mr. Gilks made with his Leica. Upper two are sections of a bronze door in Florence. Center left, a scene at Cannes. Center right, Mr. Gilks and his wife and a friend snapped in the Montmartre district in Paris. Lower left is an interior in the Castle Sans Souci. Lower center is a shot through a window of the famous Casino at Cannes. Lower right is another shot in the Castle Sans Souci at Potsdam.

Around the Globe with a Camera

by **ALFRED L. GILKS, A.S.C.**

Chief Cinematographer, Vanderbilt Oceanographic Expedition

● Editor's Note: Mr. Gilks left Hollywood last June on a globe-circling expedition with Commodore W. K. Vanderbilt. The expedition left Northport, L. I., on board the Vanderbilt yacht, *Alva*. Special camera and scientific equipment were taken, and a special housing for underwater use of the Eyemo camera was devised for the trip. In a previous article Mr. Gilks wrote of the first part of the trip, and in this article picks it up at Monte Carlo.

ON DECEMBER 19th, we arrived in Monte Carlo, having circled the globe except for running across the Atlantic. On our arrival in the south of France we had travelled 26,000 miles and stopped at more than sixty different places. We were enroute twenty-four weeks, so averaged more than 1,000 miles a week including stops.

I should like to pay a tribute to Commodore Vanderbilt's ability as a seaman. Captain of his own vessel, he took complete responsibility of navigating and handling the "*Alva*" throughout the voyage. Often we were far from the well charted steamer lanes visiting out of the way islands, many of them poorly charted and surrounded by dangerous reefs. We encountered many unrecorded currents which set us far off our course and might easily have caused a mishap had not the strictest attention been paid to the navigational work. During thick stormy weather he never left the bridge more than a few moments night or day. Commodore Vanderbilt, an expert seaman and skillful navigator, may well be proud of his accomplishment of taking the "*Alva*" around the world without once jeopardizing her safety. During the cruise a wealth of material was gathered for his museum.

I exposed 30,000 feet of black and white and 10,000 feet of color negative, quite a complete photographic record of the interesting places visited. Scenes ranging from the pleasant south sea islands and eastern Pacific, seldom visited smaller islands of the East Indies; beautiful Bali; busy Java; Banka Islands, in the district Joseph Conrad often wrote of; Singapore, the crossroads; Penang, gem of the Malay States; Ceylon, reputed to be the most beautiful Island in the world; Aden, in the treeless Arabian desert; Cairo, city of cities; Pyramids; the Sphinx; Nile; Greece; Athens; stately ancient temples of Jupiter; Zeus; the Acropolis; the Corinth Canal; Itea; the ruins of Delphi, including Oracle of Apollo; Patras; Naples and Monte Carlo.

Mrs. Gilks joined me shortly after our arrival. We spent several days visiting along the Riviera before starting a little tour through Europe. While in Nice I called at the studio where Rex Ingram was just finishing a picture, had a pleasant chat with Mr. Ingram and his cinematographer Mr. Burel.

On a bright sunny morning we left Nice for Genoa, arriving there just at sundown, a beautiful ride I shall never forget, along the French and Italian Riviera, through quaint old villages along the coast until we reached the busy city of Genoa. All the way the road is an ever changing panorama, steep colorful hills and mountains to one side and picturesque coastline and deep blue of the Mediterranean to the other.

From Genoa we journeyed to Florence by train. The weather turned cold and stormy making exterior sight-seeing unpleasant but we didn't mind. The time we had was not nearly enough to enjoy to the fullest the works of art in the great "Uffizi Gallery," sculpture by Michelangelo in the "Medici Chapel" and "Pitti Palace," which houses the finest collection of paintings in Italy.

Next visited beautiful Venice, rich in history and entirely different from any other city. All Venetians should live to a ripe old age, they don't have automobiles. I can assure you a gondola is a much more pleasant conveyance than a taxicab.

Innsbruck, in the Austrian Tyrol, was our next stop. We rode to the top of a nearby Alpine peak by suspended cable car. From the porch of an inn we could watch the people who were enjoying winter sports and were fortunate to see some expert skiers in action.

From Austria we crossed into Germany stopping first in Munich. While there we spent practically all of our time in the Deutsches Museum which is devoted to the history of liberal arts, science and mechanics. A tremendously big place and intensely interesting. I hope to visit Munich again and have several weeks to spend there instead of a few days.

Our next stop was Nuremberg; the old city, built between the eleventh and fourteenth centuries, is in the heart of the present modern city. It is still surrounded by two massive

(Continued on Page 46)



Two remarkable snap-shots made by Mr. Gilks on his trip. The one on the left was made at night in front of the famous Moulin Rouge. The one at right is a snap-shot of a scene in Mistinguett's theatre from Mr. Gilks' seat during a performance. Both made with a Leica and the new fast film.

HAL HALL

says

Less Shutdowns?

IF ONE can take the reports from the various studios as being really serious and truthful, the picture industry during the coming summer should be less heart-breaking for the technicians than have been the past months. For, these reports indicate that there will be fewer shutdowns in the immediate future.

This is good news, if true. But, looking over the records of the past, one takes the reports and announcements from the studios with a grain of salt. Most of the studios in times past announced, with much seriousness, that there would be no cut in salaries in the various studios. When the announcements appeared in the public press and the announcers had taken the bows that followed, pay checks were immediately slashed—are still being slashed. It is stuff like that which makes for less efficiency in the picture making world. Why does a studio official announce anything unless he is certain he will be able to carry through his promise? Much better to merely say that it is "hoped" that such and such will be the case. This business of "running off at the mouth" by studio and other picture officials is perhaps one of the reasons that the picture industry is in the tough spot it is in today.

Sex Pictures

THE recent warning by the British Censorship Board that there will be more drastic censorship of pictures in the British Isles unless the sex element is toned down should give American producers something to think seriously about.

While this writer's opinion may not be worth a plugged nickel, I am wondering just how far some of the producers will eventually try to go in the matter of Sex. Some pictures would indicate that some producers' minds must be in the gutter; and this is not good for the picture business. Pictures have the opportunity to be a tremendous educational force. Why use this force to pervert the public mind! If the pictures that toss sex matters about loosely turned out to be box-office smashes one might think that they were made because of the financial return. But the real money-making pictures invariably are the clean ones. So what is the answer? It is such rot that leads to more and more censorship.

Film Daily Year Book

YEAR by year Mr. Jack Alicoate's "Film Daily Year Book" gets bigger and better. This year's copy has just reached this writer's desk, and we want to tell you, Mr. Alicoate, that you and your able staff should be congratulated. As a volume of statistical facts and figures relating to the industry from production to exhibition, it stands alone. Anyone needing information of this character should not be without it.

Thanks

LAST month we asked our readers for criticisms and suggestions as to what articles to secure for future issues of the Cinematographer. The results have been gratifying, although rather surprising. Most of our readers seem to think we are giving them just what they want. Only a few have any complaints—and they are mild ones. We have also received some excellent suggestions. Let them keep coming.

The Amateur Contest

AMATEUR movie makers should note the rapid increase in the value of the prizes offered in our AMATEUR MOVIE MAKING CONTEST. It started as a contest offering \$1000.00 in cash prizes. To date equipment prizes have been announced totalling \$707.00—making the total prizes valued at \$1707.00—which is quite a mark to shoot at. AND—next month more equipment, and several additional cash prizes will be announced which will bring the value of prizes to \$2000.00. Now that the spring and summer months are just ahead, many an amateur would do well to get busy on a picture. The contest closes on October 31, 1932. That seems quite a long time away, but time flies rapidly. Better send in your intention of entering a picture, if you are a subscriber. Send your subscription, if you are not one. And remember—this is a contest SOLELY for AMATEURS, so you will not be faced with professional competition.

Boeger Leaves

HY BOEGER, for years general manager of the Mitchell Camera Corporation, and a close friend of practically every cameraman in Hollywood, has left the Mitchell organization. He left on the first of March. Hy is now located directly across the street from the Mitchell plant in his own building. He has many business activities and projects of his own, and we wish him as much success in the future as he had in the past.

This and That

IF ALL the reports coming from the motion picture studios are true things should soon be rosier in Hollywood . . . let's hope so . . . Things in this town don't look so hot right now . . . Hollywood Boulevard, long touted as shopping center of class, now has sixty-four vacant stores in a few blocks . . . This should be food for thought for those picture aspirants who have their faces turned this way . . . Roy J. Pomeroy is reported forming new producing company . . . Good luck, Roy . . . Report also has it that Pathe studio, closed for some time, will be opened soon as a rental spot for the independents . . . Charles Stumar, veteran cameraman, shooting at Universal . . . also Dan Clark who says it's just like old times being with Tom Mix again . . . Hal Mohr, genial past president of the A.S.C., is said to be developing into a flyer of rare ability . . . If he flies as well as he makes pictures he should be a classy air bird . . . Ray June is going to have a tough job at Paramount . . . going to photograph the four Marx brothers in "Horse Feathers" . . . won't be able to work for laughing . . . According to announcement, a department of Cinematography has been added at the University of Southern California . . . to be headed by Mr. Morkovin . . . See where our old friend Lambert Hillyer has been assigned to direct a series of Buck Jones pictures for Columbia . . . Often wonder how a lot of film companies ever accomplish anything when you almost daily read announcements of changes of big executives . . . wonder how Standard Oil or Shell would make out if such were the case in their organizations . . . Stability makes for efficiency . . . if we know anything about it . . . No man can give his best work if he is wondering whether or not he will lose his job the next day.



Icy Shore

Harry Adams



Network of Industry

Clarence Slifer



Tiles

Clarence Slifer



Winter on the Marsh

H. M. Armstrong

M-G-M Portable Outfit

(Continued from Page 10)

Noise reduction is secured by bridging the noise reduction amplifier (a single stage) across the output of the main amplifier. The output of the noise reduction amplifier is carried into a copper oxide-lead, full wave rectifier, a timing circuit, and a control circuit, and into the valve. Sufficient gain is provided to use up to 10 db noise reduction with a 6 db margin.

Valve tuning and checking is accomplished in a unique manner. The 9000 cycle oscillator mentioned above is connected to the input side of the valve repeating coils. By patching the P.E.C. amplifier output back to the volume indicator the latter gives a direct indication of the characteristic peak when the tuning point is reached. A direct measure of valve efficiency is obtained at the same time.

The plate battery for all the tubes is mounted in the amplifier box, together with fuses and space current jacks. This battery is also used as a supply for the microphone amplifier, P.E.C. amplifier and valve tuning oscillator. Filament supply for the tubes is obtained directly from the storage battery box, where three cells are set aside for this purpose.

Motor System

The recording machine motor and the two camera motors are of the "DC interlock type"; that is, they derive driving power from a source of direct current, but by means of 3-phase slip-rings on each unit an interlock between units is maintained. The motors receive their power from a 110 volt supply in the two storage battery units. The recorder motor has two poles, and operates at 2880 R.P.M., while the camera motors have four poles and operate interlocked with it, at 1440 R.P.M., the interlock frequency being 48 cycles per second. By suitable construction of each of these units, it is possible to obtain extremely good hand regulation of speed, and to provide a very strong interlock between units. In addition, the whole system may be started in the interlock condition, which is a very desirable feature where synchronizing marks are difficult to obtain. In the development of this motor system, considerable difficulty was at first experienced with the control of speed when a camera was attached, particularly in the case of the Mitchell camera, which has an inherent unbalance in its reaction upon its driving motor. This represented considerable of a problem until steps were taken to design greater stability into the motor units themselves. The solution finally obtained is completely satisfactory for the purpose.

Speed control is obtained by means of a field rheostat, which is mounted in the amplifier unit, and an indication of the speed is obtained through a vibrating reed type of tachometer connected to the 48 cycle output side of the motors. With storage battery power supply, the speed, once set, is sufficiently stable to permit of musical recording without observable speed variation in the reproduced results. From this standpoint the apparatus is quite equivalent to a standard channel.

The recording machine driving motor includes several very unique features. In the first place, it operates as a driving motor interlocked with the camera motors, to provide a source of driving power for the recorder. In addition, by means of an extra winding and commutator, it supplies up to 60 watts at 6 volts, direct current, to operate the field winding of the valve magnet and the filament of the exciting lamp. Inasmuch as the ratio between this 6 volt supply and the 110 volt original supply is fixed by the dynamotor winding, the exciting lamp voltage remains essentially constant over a period of several hours with ordinary intermittent use of the outfit. A rheostat and meter are provided for adjustment and control. The use of the driving motor as a power supply for the lamp serves a useful purpose, in that lamp supply becomes available at the exact instant when desired for recording, but is never wasted between shots. If, however, it is desired to check the valve or the P.E.C. monitor circuit without using film, a hand-op-

erated clutch between the driving motor and the rest of the machine isolates the motor and permits the lamp and valve to be operated.

Starting and stopping of recorder and camera motors may be done at any motor position, but the arrangement of the equipment is such that the recorder operator most readily handles this control. The time of starting and stopping is so small as to be negligible. As an example of this, there is a case on record where the machine has actually recorded a part of the order from the director to start the system.

Battery Supply

The 110 volt motor supply batteries and the 6 volt filament supply batteries are mounted in two carrying cases, each case containing half the batteries. These batteries are of 12 ampere hour capacity, adapted to fairly rough handling, and weigh a total of 180 lbs. or 90 lbs. per unit. One cable, having a single plug at either end, connects the two units together, and an additional single cable connects power from them to the amplifier unit, from which it is distributed to the others. For charging, either 110 volt D.C. or A.C. may be used, by means of a charging resistance or a tungar rectifier or, in cases where it is desired, a commercial type gasoline-driven motor generator set is available. This unit is very satisfactory for the purpose. It consists of a single cylinder, gas engine, driving a 110 volt, 1½ K.W. generator, and weighs a total of about 100 pounds. It is not intended that this unit will be used for ordinary locations, but solely where a distance from the base is great, or the type of location is such that independent charging facilities are required.

Microphone and Cable Unit

Inasmuch as a microphone and cable are definitely required for every operation, a carrying case is provided for them. In the center of this case is a cylindrical compartment which houses a bomb microphone of standard M-G-M design. The outside of this compartment serves as a hub upon which revolves a drum which carries 250 ft. of 6-conductor cable, broken up into convenient lengths for interchangeable use with cameras and microphones. The whole unit weighs but 73 pounds, and serves as a very convenient means of transporting these necessary parts of the system.

Spare Parts

The spare parts are a very essential part of the portable unit of any type. At the studio, repair parts are readily obtained with a minimum of delay, but on location work the lack of any particular replacement part involves the loss of considerable time. The list of spare parts for this portable recorder was given a great deal of study to reduce it to a minimum, and yet, at the same time, to provide sufficient material for even more than ordinary repairs. The majority of the spare parts are carried in the base of the recording machine, which is hinged to provide ready accessibility. They include such items as the following:

- Spare valves,
- Hydrometer for testing batteries,
- Tape,
- Miscellaneous screws and wire,
- Spare condensers for microphone,
- Ribbon for tuning valves,
- A microscope and jig for checking valve spacing and adjustment,
- Oil and cleaning liquid,
- Spare tubes.

The microscope for checking valve adjustment deserves special mention. It is the standard studio type of microscope but with a special mounting which enables it to be fastened to a holder on the recording machine itself. Thus, the recorder

serves as a solid base for the delicate operations of tuning and adjusting valves. The microscope and adjusting instruments are carried in the cover of the recorder box when not in use.

Operation

The normal operating crew for an apparatus of this type in studio work, is two men; but the arrangement is such that one man may operate the entire unit without difficulty. With the units stacked, as shown in Fig. 1 above, it will be seen that all of the control points are readily available at the amplifier box. In addition, the recorder is mounted not more than a foot or so away, so that the threading of film may be done without changing from the mixer position. This arrangement is of importance in production, as there are many times where conditions are such that but one man may be sent out, because of some peculiarity of the location. For transportation the outfit involves a group of 6 boxes.

The outfit has been in use in production for some time, and has given completely and uniformly satisfactory results. In operation, it is much preferred by the recorders over the standard equipment, from the standpoint of convenience and ease of operation. The quality of the product obtained with it has been at least equivalent to normal studio results, and in some cases it has been felt to be superior. In any case, it represents a definite improvement over previous semi-portable apparatus, and enables recording in locations where such work was formerly quite impossible.

The outfit was completely designed by the Sound Department of Metro-Goldwyn-Mayer Studios, and constructed at the studio. The author is indebted to Mr. O. L. Dupy for the evolution of the motor driving and control arrangements; Mr. O. O. Ceccarini for the amplifier and noise reduction development; and Mr. C. S. Pratt for the solution of many of the problems which occurred in the course of the design and construction.

New "Rico" Quarters

TO MEET the demands of their growing business the Radio Installation Company, and E. H. Hansen Laboratories are moving to their enlarged quarters at 6059 Santa Monica Blvd., Hollywood.

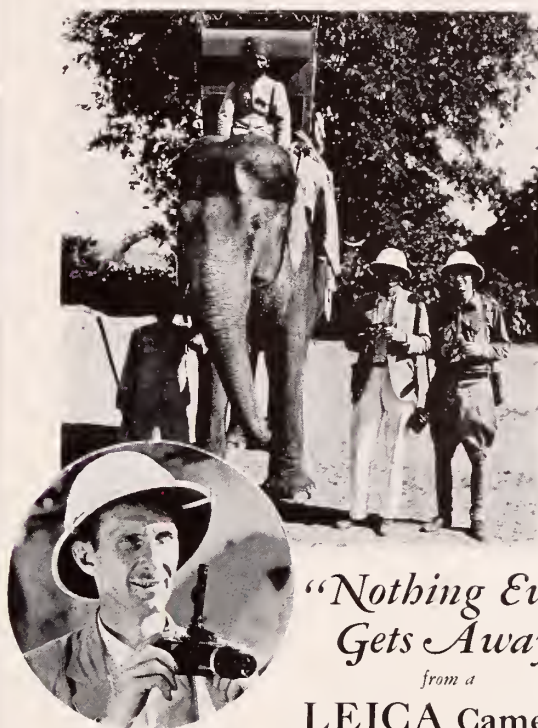
With over 3,000 square feet of available floor space the new plant will have spacious show rooms, offices, machine shop, research laboratories and projection facilities. Everything necessary for the complete testing of sound recording equipment will be provided and development of new apparatus will be speeded up. An important announcement of the new "Full-Range" recording system will be made in a subsequent announcement.

To handle the Far East markets C. W. Faulkner is leaving at once for India to establish the necessary branch offices. Other engineering representatives are being assigned to Japanese and Chinese branches, under the supervision of W. E. Deming, executive manager of RICO.

Rule On Talking Rights

THE Paris law courts have decided that the talking picture is but a development of the silent picture and that film rights include the talking picture rights. The verdict was reached in the action brought by Maurice Lehman against Osso Films which made a talking version of "L'Aiglon." M. Lehman holds the stage rights. The court held that film rights (which includes the talkie rights) remained vested in Rostand's heirs, Lehman having acquired only rights for a stage production. The decision is one of great importance to the French film industry.

LEICA "On Location" in India with G. F. and E. B. Schoedsack, *Paramount Photographers.*



"Nothing Ever Gets Away"

from a

LEICA Camera

"Have just returned from INDIA with my brother, Ernest B. Schoedsack, who directed scenes for the Paramount Public Film, 'THE LIVES OF THE BENGAL LANCER.' As the picture is to be completed in Hollywood this year, it was necessary for me to make a great many stills for reference in reproducing settings and costumes in the studio.

"For this work the LEICA was unequaled. I always carried two of these cameras and have come to consider the LEICA as a part of my clothing, rather than as a part of my equipment, for I am never without them.

"I can truthfully say that nothing ever gets away, even when I was on location, making tiger pictures with the LEICA Camera. Interesting street scenes, character studies of natives, subjects that cannot be posed and will not wait, my LEICAS get them all without fail and the quality of the negatives leaves nothing to be desired." — G. F. Schoedsack.



Showing the new Leica 73 mm. HEKTOR f 1.9 speed lens mounted on camera.

Leica

The Universal Camera

WITH 6 INTERCHANGEABLE LENSES

Amazingly versatile, speedy and accurate, the LEICA Camera is yet so small and light you can put it in your pocket and take it anywhere! It is the perfect "still" camera for every cinematographer, amateur or professional. With its 6 interchangeable lenses, it gives you many cameras in ONE—a "speed" camera, a panoramic camera, a telephoto camera, an aerial camera, a portrait camera and many more. Economical—takes up to 36 pictures on a single roll of cinema film. Enlargements to 12 x 18 inches or more are wonderfully sharp and clear. LEICA negatives can also be printed on positive film for screen projection.

Write for Free Booklet

describing the Leica Camera, to Dept. 77.

E. LEITZ, Inc., 60 E. 10th St., New York

Concerning Cinematography

Critical Comments on Current Pictures
by **WILLIAM STULL, A. S. C.**

"ONE HOUR WITH YOU"

◆ This is far and away the best picture yet turned out by the redoubtable Chevalier-Lubitsch-Milner combination. Even as there is no director who can quite approximate Lubitsch's inimitable touch in directing these frothy, polished musical films, neither is there another cinematographer whose technique is so adapted to such pieces as is that of Victor Milner, A.S.C. Every scene reflects the mood of polished gayety which characterizes the picture. Although the lightings lack the originality of those in "The Broken Lullaby," they are no less perfect, and display the players and sets to the maximum advantage. There is a good bit of camera-movement, but, as in all Lubitsch pictures, it is used intelligently, and for a definite dramatic purpose. The process work is excellent.

But the outstanding feature of the film, technically, is the extensive use that has been made of tinted-base positive stock for the release prints. The picture owes much of its visual charm to the fact that all of the night interior sequences have been printed on Candleflame stock, and the night exteriors on Lavendar-based stock. Mr. Milner and Mr. Lubitsch deserve a vote of thanks from the cinematographic community for having persuaded the Paramount powers that be to take this step. And—the sound engineers who have held that tinted-base stock injured the quality of the reproduced sound should by all means see this film, for (to this observer, at least) the quality of the sound on the tinted portions of the film was distinctly better than that on those for which ordinary untinted film had been used.

"SHANGHAI EXPRESS"

◆ Here is another film from Paramount which is deserving of mention as an example of perfect cinematography. Lee Garmes has here achieved a notable example of purely pictorial cinematography. Every scene is a gem of photographic pictorialism—perfect in conception, composition and cinematic execution. In addition, there are several closeups of Marlene Dietrich which are literally breath-taking in their sheer beauty. They rank as the best individual scenes of many a year.

The picture is well directed and excellently acted, but it is above all a cameraman's triumph, for it shows how far superb cinematography will go toward making a great picture out of an otherwise undistinguished story. Together with the photography, the sets and the manner of their dressing establish a remarkable atmospheric effect; long after story and acting have passed from the viewer's mind the atmosphere of China—not perhaps the China of fact, but the inscrutable and chaotic China which we conjure up in our minds after perusal of the latest war-bulletins—will remain.

"CARELESS LADY"

◆ Students of cinematography can learn a great deal from a careful study of this production, which was photographed by John F. Seitz, A.S.C. and George Schneidermann, A.S.C. The picture was begun by Mr. Seitz, who was unfortunately taken ill midway through the production, and finished by Mr. Schneidermann. The resulting picture offers an interesting study of the methods of these two excellent cinematographers, whose artistic styles are widely divergent. Mr. Schneidermann has so excellently adapted his technique to the task of matching Mr. Seitz' scenes that only a technician can say "Here is a scene by Seitz, and there one by Schneidermann."

Viewed as a whole, the picture offers an interesting thought in its treatment of the "ugly duckling" plot. In the early sequences the photography is plain and straightforwardly

newsreelsque, to accentuate Joan Bennett's characterization. When, however, Miss Bennett's role is metamorphosed into the strikingly beautiful person that she really is, the photography takes on all of the studio embellishments which naturally are used to display feminine stars. It is a very effective conception.

"DISORDERLY CONDUCT"

◆ Ray June, A.S.C. has turned in another excellent piece of cinematography in this fast-moving little comedy. The picture opens with an excellently photographed night sequence, and continues through a wide range of sets and photographic moods, all of which are expertly treated, and deserving of study by both amateur and professional cinematographers. It may be mentioned, too, that Spencer Tracy has never been photographed so sympathetically before.

"ARSENE LUPIN"

◆ The primary attraction of this film is, of course, the teaming of the brothers Barrymore, but the photography, for which Oliver T. Marsh, A.S.C., was responsible, deserves equal billing. It is thoroughly satisfactory throughout, both in the more restrained sequences and in the melodramatic ones which gave Mr. Marsh interesting opportunities in lighting. There was, perhaps, a shade too much camera-movement, but the photography is, like the performances of the stars, rather more than adequate, if not at all Marsh's best.

"SHE WANTED A MILLIONAIRE"

◆ This picture is rather surprising, for it begins as an innocuous little comedy-drama, and ends up as a wild melodrama. This must have offered John F. Seitz, A.S.C., who photographed it, quite a variety of problems; but the result is eminently satisfactory. In the later (and more melodramatic) sequences in the French Chateau, Mr. Seitz has achieved some very interesting effect-lightings, which are worthy of study by all who are interested in cinematographic effects.

"DANCERS IN THE DARK"

◆ This picture is a waste of time for all concerned. It is entertaining enough, but hardly justifies the talent expended upon it. While it is photographed expertly by Karl Struss, A.S.C., it does not show the same perfection that some of Struss' previous films as "Dr. Jekyll and Mr. Hyde," "Coquette," and "Sunrise" have shown. It is likewise a photographic as well as a dramatic setback for Miriam Hopkins. There are plenty of cinematographers whose skill is quite adequate to such films, but few who are, like Struss, capable of photographing a "Jekyll and Hyde." While, of course, all productions cannot be specials, and equal to the attainments of their makers, using Struss' great talents for such a film as this seems as unworthy as using the Philadelphia Symphony Orchestra to play the Peanut Vendor.

"BROKIGA BLAD"

◆ Occasionally Hollywood enjoys the privilege of seeing films from the more remote corners of the earth. "Brokiga Blad" is one of them: the first Swedish talkie to appear. It is skillfully photographed by Herr Ake Dahlquist, who has done an excellent job with a minimum of technical resources. Such pictures as this should be frequently seen by every technician in Hollywood, that they might fully realize the perfect working conditions existing in our studios. Herr Dahlquist's treatment of the comparatively few interiors in this film is excellent, and his lightings natural. We are eager to see a regular dramatic picture from this gentleman's camera.

Art

by **JOHN ARNOLD**

President, American Society of Cinematographers

THE cinematographers of today are an unique group. I doubt if there exists another such body of men as these, whose work demands that they combine the roles of artist and scientist. Certainly, there can be no group of artists who have made such great contributions to the purely technical and scientific phases of their art, nor a group of technicians who have to their credit such outstanding artistic triumphs.

Account has previously been given of the technical progress of cinematography, and of the portion thereof for which cinematographers, individually and collectively, have been responsible. Have their efforts in the artistic phases of cinematography been as productive?

Unquestionably, they have. This is the verdict, not alone of this writer, nor of the industry, but of the vast army of critics and the ultimate judge—the public. It may perhaps be most easily gleaned from the thumbnail reviews printed in many of the trade, fan and lay journals; regardless of the comments upon the story, direction, and acting—which range from “great” to “bad”—the comment on the photography is almost invariably “excellent.” A rating of “poor” for photography is rare indeed nowadays, and one of “bad” is unheard of.

This is a very satisfactory state of affairs, indeed, but it becomes far more than that when the artistic problems of cinematography are considered. For cinematography itself is unique among the graphic arts in that it involves not only form, line, and light and shade but also movement. When the older arts of sculpture, painting and their subsidiaries, and the newer art of still photography deal with these things, and attempt by them to suggest motion, cinematography alone deals with motion itself. This at once widens the artistic scope of cinematography and vastly increases its artistic difficulties. For not only must the relatively static phases at the beginning and end of each movement be an artistic composition, but so must every intermediate phase—no matter of how short duration—and the motion itself. Furthermore, not only may the actual objects within the picture move, but also the camera itself. This, in competent hands, gives rise to infinite possibilities—and in inept ones, to infinite peril. That cinematography is today a recognized art-form is a high tribute to the skill and artistry of our cinematographers; the more so since these men have not merely practiced a time-honored and known art, but pioneered and created a new one. Their progress and achievements are thus doubly inspiring.

At its inception, cinematography was in no sense an art. Quite the contrary! It was merely the mechanical job of running a motion picture camera and reproducing—no matter how—motion. It was not until long after the introduction of the dramatic element that cinematographers and others in and out of the industry began to discover that cinematography was not merely a reproductive mechanical operation but a creative art.

In the score or more of years that have elapsed since that time, the cinematographers have created a new art-form and a new artistic technique. There have been no established rules nor precedents to guide them; no known technique to follow. They have been forced to adapt what they could from the underlying principles of the other graphic arts, and to create the rest—and this has been the major part—as they progressed. And none of this has come from definite study or experimentation in the accepted sense, but has been evolved, perforce, in the course of actual commercial production. It has developed through the necessity of a technique for telling stories in moving pictures.

To this end, the mechanical and scientific advancements brought forth by the various engineering and scientific bodies have been accepted and adapted to suit the requirements of the growing art, while time and again individual cinematographers have evolved technical devices and methods in order to meet the demands of individual story situations, or to enable them to attain certain artistic effects which they might require.

For, first and last, cinematography must make itself the vehicle for the telling of stories. It may not digress to chant its own praises, nor to exhibit the artistry of the individual cinematographer. It has therefore developed an unique group of artists, and an unique artistic ideal. Briefly, that ideal is to so perfectly suit the cinematography to the story that the former is imperceptible, and the latter is subtly heightened. To do this requires the greatest artistic skill, for the cinematographer's work is the vehicle through which the contribution of every other member of the company is brought to the screen; only if the camerawork is perfect can the rest appear to their full-est advantage.

The dramatic uses of cinematography can be only hinted at in so limited space as is here available. It is not alone the purpose of the cinematographer to show that which the story requires to be shown, and to conceal that which it requires to conceal, but to match the visual impression given by the photography of every scene to the dramatic impression that is to be given, not alone by the scene, but by the entire production. If this be done successfully—and it is in the majority of cases—the visual quality of each scene serves like the overture to an opera, and subconsciously prepares the minds of the viewers so that they are psychologically receptive to the dramatic action taking place.

But not only must the visual mood of each scene correspond to the scene's dramatic mood, but to the dramatic mood of the entire picture. So, too, must the photography sustain the dramatic mood of the picture throughout. This is done primarily with lighting. The attention of the audience is concentrated upon the relatively small area of the screen; therefore they cannot escape being subconsciously influenced by even minute variations in the keying of the lighting. If the picture is basically a sombre drama, and thus photographed in sombre lower-keys, and scenes or sequences of a lighter dramatic mood are photographed in somewhat higher keys, the audience, subconsciously noting the visual difference, will be more receptive to the changed dramatic mood than could otherwise be expected. The same holds true of every other type of action and dramatic-pictorial contrast.

The next logical step in this direction is undoubtedly the more general use of color-cinematography and colored lighting. Already experiments have shown a few of the possibilities lying in this direction. All that is lacking is a greater confidence in the possibilities of color on the part of executives, and technical improvements in natural-color cinematography which will render it a more stable commercial proposition. Cinematographers generally, I believe, realize the infinite potentialities latent in color cinematography and colored light-sources, and await only the opportunity to prove them.

Returning to the present, a most satisfactory phase in the artistic development of cinematography is the manner in which the art of cinematography is developing along nationalistic lines. Each nation which boasts any sort of an established film industry is developing a distinctly individual artistic style of

(Continued on Page 48)

Bell & Howell Celebrates Silver Anniversary

THIS month the Bell & Howell Company will celebrate the silver anniversary of its founding, and in this connection it is interesting to recall some of the events in the progress of this company from its small beginnings to its present substantial position in the motion picture industry.

When, in 1907, the Bell & Howell Company was founded in Chicago by Mr. Albert S. Howell and Mr. Donald J. Bell, the motion picture industry was in its infancy. Each and every producer was following his own whim insofar as size and perforation of film were concerned. Plots were simple, acting amateurish, and about the only thing to be said for the motion pictures of the day was that they showed motion. You who remember the early movies will hesitate to compare them with the super-productions that you witness in the theatres of today.

No small part of the advance toward movie perfection is due to the activities of the Bell & Howell Company which has set many standards for the industry by designing cinemachinery of outstanding quality.

From the very first Mr. Howell, the engineering genius of the company, saw the need for standardizing the width and perforations of film. The multiplicity of film types in use made the distribution of finished pictures difficult and severely limited. The situation was little less than chaotic. With the need for uniformity always in mind, Bell & Howell built but one type of equipment—that for handling 35 mm. film, which they considered the correct theatrical size, with what they considered the most suitable perforation. Although repeatedly asked to build equipment for special size film with various perforations, the company held steadfast to its purpose. And the 35 mm. film which they were built to use became, largely for this reason, standard for the industry. This standardization is one of the big events in the progress of motion pictures, for it meant that any theatre could show the photoplays of any producer. In 1907, '08, '09, the new company designed and built perforating machines, film printing machines, and motion picture cameras—all for 35 mm. film.

With the Bell & Howell standard perforator assuring absolute accuracy in the construction of the film, and the 35 mm. camera and printer making available features and precision otherwise unknown, the producer could accomplish results and effects which added tremendously to the interest and acceptability of motion pictures. Then the movies began taking their paramount position as an unequalled entertainment feature. In 1917 Mr. Bell's interest was purchased by Mr. J. H. McNabb, who at the time was general manager of the Bell & Howell Company. With him as associates came Mr. R. J. Kittredge and Mr. C. A. Ziebarth, the latter now secretary of the company. Today Mr. McNabb is president of the company and Mr. Howell vice president.

Searching for larger markets, Mr. McNabb and his associates saw the great appeal that amateur or home movies would make to the general public. Here again the Bell & Howell Company stuck to 16 mm. as a standard. By 1926 the world-wide acceptance of the Filmo camera and projector for amateur use had reached such proportions that the Bell & Howell Company had constructed a new building, increasing their factory and office space many times. By 1929 more than 1200 employees were associated with the Bell & Howell organization. Into this new factory came men from every part of the world to study the manufacture of Filmo equipment so as to return to their own countries to act as distributors and to set up service stations for Filmo cameras and projectors.

In addition to the long established Hollywood and New York offices was added Bell & Howell Company, Ltd., at London to serve the amateur and professional cinematographers in the British Isles, and to maintain a closer contact with customers in Europe.

Continued growth also made it necessary to establish Filmo A. G. of Central Europe at Zurich, the Filmo Company of Holland, and other service stations at strategic points throughout the world either under the company's name or in the name of old connections who had been handling Bell & Howell's products in their respective markets.

In 1929 the Bell & Howell Company's engineering laboratories housing several hundred engineers and designers were opened on Rockwell Street in Chicago to relieve the congestion in the factory which, when constructed three years previously, was thought to be amply large to care for the company's requirements for many years to come. The Bell & Howell laboratories are a distinct contribution to the motion picture industry because assembled in them, under Mr. Howell's direction, are a group of engineers who have grown up with the motion picture industry and are in a position to take care of any technical problems arising in the ever changing motion picture industry and to help point the way to new advances and discoveries.



RCA-Victor Cuts Its Prices

WITH an announcement covering the introduction of two new all AC operated equipments which have been designed for the theatres up to 4,000 seating capacity, a substantial reduction in the prices of three types of apparatus, a further reduction in service charges and an entirely new merchandising policy, E. O. Heyl, manager of the Photophone Division of the RCA Victor Company, created something of a sensation at the conventions of the Allied Exhibitors in Detroit and the Motion Picture Theatre Owners in Washington last month. In making his unexpected announcement, which was received with unanimous acclaim by the assembled exhibitors, Mr. Heyl said he was transmitting to them the first fruits of the economies resulting from the recent consolidation of RCA Photophone with the RCA Victor Company and that he hoped that exhibitors all over the country would recognize its importance.

The two new all AC operated sound reproducing units, which Mr. Heyl referred to as the Standard Large, for theatres having from 1,400 to 2,500 seating capacity and the Standard Super, for theatres having from 2,500 to 4,000 seating capacity, are the only standard equipments operated by AC power supply that have been designed for theatres of the capacities mentioned. In addition to the convenience provided by the elimination of batteries and motor generators and the resultant saving in upkeep and installation cost, the prices of these two equipments have been reduced. Heretofore the so-called Super Size Equipment's lease price was \$8,000. The price of the new Standard Super, all AC operated, is \$5,000. The former price of the Standard Large equipment was \$6,000. The price of the new Standard Large, all AC operated, is \$3,750.

Mr. Heyl also announced that the seating capacity limitations of the all AC operated Special Size equipment has been increased to 600 seats; the Standard Small Size to 1,400 seats and the Standard Large Size to 2,500 seats. Service charge reduction from \$32.50 to \$25.00 a month on the Special Size equipment; from \$65.00 to \$32.50 on the Standard Small Size equipment and a reduction from \$130.00 for four contract calls to \$65.00 for two calls monthly on the Standard Super Size equipment and a reduction in the financing interest and collection charges also were announced.



New Portable Projector Is Developed by Carlton

DEVELOPMENT of a new portable sound-on-film projector said to consist of several unique and novel features for this type of equipment has been announced by the James L. Carlton Laboratories of Elmhurst, N. Y.

WHAT DOES YOUR PUBLIC KNOW ABOUT RAW FILM?

NOTHING, perhaps. Yet, whether they're aware of it or not, people are profoundly influenced by the *photographic quality* which that film gives or does not give them on the screen. It may mean all the difference between a picture that goes its quiet, unprofitable way and one that becomes the talk of the town.

There's no need, these days, to run the risk of sacrificing photographic quality. Eastman Gray-backed Super-sensitive Negative, with its unmatched qualities and its never-failing uniformity, costs no more than other films, yet it helps substantially to head the picture for success. Wise the cameraman who uses it...lucky the exhibitor who runs prints made from it!

EASTMAN KODAK COMPANY

J. E. Brulatour, Inc., Distributors
New York Chicago Hollywood

.. In the Realm of Sound ..

Less Clothes, More Sound

AN UNUSUAL, and perhaps little considered, element of theatre sound reproduction to be considered in designing theatres and large auditoriums is brought to light by Paul R. Heyl, of the Bureau of Standards, Department of Commerce, in a circular recently prepared by him on "Architectural Acoustics." He points out that because of the lighter apparel of modern women, sound is more audible in theatres today than in years past when women wore countless layers of underskirts and more voluminous outer clothing. This because clothing absorbs sound. The less clothing, the less sound absorbed.

The circular in part says that in calculation of the amount of sound absorbing material necessary, allowance must be made for the absorption of the audience. Because of the fibrous character of clothing material each person is equivalent in sound absorption to perhaps 10 to 12 square feet of acoustic plaster. Experiments conducted in 1895 by Professor W. C. Sabine of Harvard University showed that, in a mixed audience made up about equal numbers of men and women, the average per person was about 4.7 units of sound absorption.

Similar experiments conducted recently at the Bureau of Standards have given only 3.9 units. As experiments on audiences consisting wholly of men gave practically the same figure as those obtained by Professor Sabine over 30 years ago, it appeared that the difference was to be ascribed to changing feminine fashions.

To confirm this, experiments were made on an audience of women with and without coats. The results obtained were respectively 2.3 and 4.0 units of absorption.

Similar figures for men with and without overcoats were 4.1 and 4.8 units.



Massachusetts and R.C.A. Victor

FOURTEEN Massachusetts state institutions including eleven hospitals and three juvenile schools for mental defectives soon will provide sound motion pictures for the entertainment of inmates and staffs. Contracts have been drawn by G. J. Cronin, commissioner and purchasing agent of the Commission on Administration and Finance of the Commonwealth and purchase orders have gone forward for the installation of Photophone apparatus which is manufactured by the RCA Victor Company in Camden, N. J. This is claimed to be the largest contract of its kind ever consummated and closely follows one recently awarded to the same company for the installation of twelve similar sound reproducing units in hospitals and schools by the State Board of Control of Texas.



New Type Monitor

A NEW type of sound mixer or monitor desk has been designed by Porter H. Evans, chief engineer at the Warner Vitaphone studios. By means of this the monitor man is able to supervise sound recording directly from a position beside the cameras on the stage.

Warner Vitaphone, by putting the monitor desk into use, has gone direct from a fixed monitor room off the stage to this new device, thereby hurdling the in-between type of portable monitor booth used by most other studios.

Syncrofilm Portable Sound Head

MANUFACTURERS of Syncrofilm sound equipment announce completion of a new sound reproducing attachment for all makes of 35 mm. portable projectors. This sound head represents a new departure from the conventional practice in that the projector is driven from the sound head. The use of this sound head facilitates changing over any 35 mm. projector to combine sound reproduction, without making alterations to projector mechanism. The driving motor is within the sound head unit, which insures a smooth even feed of film at light source or point of reproduction.

The projector is driven from sound head by means of a flexible shaft, which is of sufficient torque elasticity to prevent any unevenness in projector transferring back to driving source in sound head. Provision has been made for maintaining a loop of film between projector and sound head, thus preventing any projector mechanism imperfections from interfering with the positive feed of film in the sound head. This feature also eliminates the necessity of perfect alignment of projector and sound head. The film control mechanism in the sound head are of the finest material and workmanship. Film sprocket is hardened and ground intermittent type. All bearings are special bronze alloy or ball bearings.

The optical unit is of the slitless type, which has made Syncrofilm sound heads outstandingly successful. This type of lens system produces a more intensive line of light within a given width than is possible to obtain by any other known method. The front lens combination or projection lens is highly corrected and operates at f 1.3. All parts subject to wear through film contact are chromium plated. The case is of special aluminum alloy, finished in black crackled enamel and having a convenient leather handle for carrying. Polarity plugs are built in the sound head to facilitate easy and rapid connection of supply lines to amplifier.

In operation the film is drawn over the light aperture in film control drum by means of a perfectly filtered driving mechanism which is independent of the projector, thus faithfully reproducing recorded sound without distortion, irrespective of any projector defect.

These sound heads can be supplied separately or including amplifiers and speaker. The amplifier is suit case type, very compact and having dynamic speaker mounted in cover, built for complete A. C. operation and can be used for either one or two projectors.



R. C. A. For Burton Holmes

BURTON Holmes Lectures, Inc., the internationally-known motion picture lecture bureau and the foremost producer of the so-called travelogue type of screen subjects in the world, has contracted for the installation of RCA Victor Photophone recording equipment, according to an announcement made yesterday by E. A. Nicholas, vice-president and general sales manager of the RCA Victor Company at Camden, N. J. Under the provisions of the contract entered into between the two companies, Burton Holmes Lectures, Inc., becomes an RCA Victor Company licensee and hereafter will record its sound motion picture product by the Photophone system.



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Laboratory Department

Conducted by EMERY HUSE, A. S. C.

Principles of Sensitometry and Their Practical Application

PART 12

Development

THE subject of exposure was concluded with the detailed description of the Eastman Type 11b sensitometer. At this point the general subject of development will be dealt with, giving considerable thought to the purely sensitometric side of the subject, but in addition to that details of the practical side of development from a motion picture film standpoint will be given.

From a purely sensitometric standpoint considered on a more or less theoretical basis, development, which includes the developer and the conditions of development itself, must be standardized and maintained just as the instrument for impressing the initial exposure is standardized. Sensitometry as practiced in a research laboratory is somewhat different and much more detailed than the sensitometry which is practiced, for example, in a motion picture production laboratory.

It is quite well known that the characteristics of any photographic emulsion as determined sensitometrically, following the prescribed Hurter and Driffield method, are to a marked extent influenced by the developing solution and to the factors of development in this solution. Each chemical in a developer plays a very definite part and the reducing agents themselves produce different effects, depending upon the type of the agent and on the different proportions of the developer constituents. The most simple developer must contain a reducing agent, an alkali, a sulphite, and a bromide. These elements are sufficient to reduce properly the exposed silver in a photographic emulsion. The effect of the variation of one or several of the constituents in a developer has been studied by many investigators. It has been shown that the variations in the constituents of the developer may modify the rate at which development progresses and as a result affect the shape and position of the characteristic curve, thus affecting values of contrast, (gamma), latitude, speed, fog, etc.

A detailed discussion of development could not be given without considering the studies of Hurter and Driffield in this field. In one of their earlier papers they very definitely recommended the use of a ferrous oxalate developer. This developer was of the slow working type but at the time of its recommendation proved to be quite a good standard from many points of view. It never became a very popular developer, due in part to the fact it required such long times of development to produce the desired image. It will be of interest to give here the ferrous oxalate formula which was used by Hurter and Driffield.

Hurter & Driffield—Ferrous Oxalate Developer

Solution A

Potassium Oxalate	1	part
Water	4	parts

Solution B

Ferrous Sulphate	1	part
Citric Acid01	part
Water	3	parts

Solution C

Potassium Bromide	1	part
Water	100	parts

For use take: 100 parts of A, 25 parts of B, 10 parts of C. Development should be carried out at a temperature of 65°F.

This ferrous oxalate developer of Hurter and Driffield's did not survive and later investigators into the theory of sensitometry, such as Mees and Shepperd, discarded the ferrous oxalate developer and adopted a pyrogallol developer. This formula was made up as follows:

Pyrogallol	8 parts
Sodium Carbonate	40 parts
(crystalized)	
Sodium Sulphite	40 parts
Water to	1000 parts

It is important to note that this formula contained no bromide. Relative to this Driffield says "this omission is of the utmost importance, and must be insisted upon, at any rate, when determining the speed of a plate. While the pyrogallol and the alkali are essential elements of the developer, a bromide is altogether unessential."

For many years a pyro developer of some sort was used very extensively in photographic practice and also in sensitometry conducted either from a research or a production control standpoint. While it might be considered quite true that bromide is an undesirable constituent in a developer adopted for sensitometric work, due to the fact that it causes variations in the speed values determined from the Hurter and Driffield curves, nevertheless a small amount of bromide is desirable from the practical point of view in order to prevent the excessive increase in fog when development time is extended. Many modifications have been made of the pyrogallol formula but listed below is a formula of the type which was used for many years for sensitometric work and found very satisfactory.

Solution A

Sodium Sulphite	876 grams
Potassium Metabisulphite	175 grams
Pyrogallol	200 grams
Water	10000 CC.

Solution B

Sodium Carbonate	750 grams
Potassium Bromide	10 grams
Water	10000 CC.

For use take equal parts of A and B.

Film Cleaning Device

A NOVEL film cleaning device that is attached to projectors and is known as the Treatizor is being marketed by Blue Seal Products Co. of Brooklyn. The new device is said to remove oil, dirt, gum, grease and other waste from the film as it runs through the projector. In the same operation, new film is so lubricated that it will not cake on the tension shoes.

Simple in design and assembled in one unit, the device is attached by removing the top magazine and film valve casting, the Treatizor is then attached and the magazine replaced. A tank, which is part of the assembly, is then filled with a special fluid provided and, after a slight adjustment is made to regulate the flow of liquid, it is ready for operation. This tank adjustment also has a lead to a safety valve placed over the aperture which is automatically released should a fire break out in the top loop and thus would release the entire contents of the tank, putting out the fire.

S. M. P. E. Notes

by SYLVAN HARRIS, Editor-Manager of the S.M.P.E.

JUDGING from the great deal of attention the Society of Motion Picture Engineers is giving to the subject of recording and projecting 16 mm. sound film, this branch of the industry promises to become a very important one in the not far distant future. The Committee on Standards and Nomenclature of the S.M.P.E., together with its various sub-committees, has been working for some time, under the chairmanship of Mr. M. C. Batsel, in an endeavor to establish standards of dimensions for the film. This work is rapidly approaching completion, and it is expected that the standards will be up for ratification by the entire Society at the approaching Spring convention to be held at Washington, D. C., May 9th to 12th.

Two plans have been evolved, one providing for two rows of perforations, the other providing for a single row, the sound track being placed on the side away from the perforations. The latter is to be recommended for adoption as the standard film lay-out, the lay-out providing for two rows of perforations being offered as a non-recommended standard that may be followed if the development of the art so directs.

An interesting and valuable method of determining the various dimensions and tolerances for establishing such standards is described in the current (April, 1932) issue of the S.M.P.E. Journal. This method involves a consideration of all the variable factors to which the film is subject in recording, processing, and projecting; including shrinkage, making allowances for tolerances already existing in recorders and projectors, weaving of the film, and a number of other factors. This method, which was first described by Mr. R. P. May at the Swampscott convention of the Society, was presented to the Standards Committee for their consideration in establishing the dimensional standards for 16 mm. sound film.

A paper by Messrs. A. S. Howell and J. A. Dubray, also published in the current issue of the S.M.P.E. Journal, questions the validity of the present shape of perforation used in 35 mm. film, advocating the use of the same type of perforation for both negative and positive film, and indicating the shape of perforation that could be introduced without creating any difficulty whatever in making the change.

Although the portable synchronized projector, known as the Animatophone, employing disks for the reproduction of sound, has been known to the industry for several months, the principles involved in the operation of the vertical turntable and the floating pick-up have been described by Mr. A. F. Victor for the first time in the current issue of the S.M.P.E. Journal. The arrangement of this floating pick-up is such that the pressure of the needle on the disk can be made anything desired by simply moving the pick-up base toward or away from the disk. Arrangements are also made for constraining the needle always to track the record tangentially to the groove.

Not long ago, Mr. H. A. Frederick of the Bell Telephone Laboratories, demonstrated before the New York Section of the S.M.P.E. new disk records made of cellulose acetate, on which he employed the hill and dale method of recording. In the current (April) issue of the S.M.P.E. Journal, Mr. F. C. Barton of the RCA Victor Company describes new developments in the lateral method of recording on disks, employing disks made of a new material called Victrolac. This material is a thermoplastic resin that must be cooled before being removed from the mould. Mr. Barton presents in his paper a discussion of the characteristics of this material, the playing time of records made of it, the operating features of the tone arm and pick-

up system, and the resonance characteristics of the tone arm itself.

S. M. P. E. Sound Committee Studies Variations in Negative Exposure

The Sound Committee of the Society of Motion Picture Engineers, as part of the program that has been set up for it to follow this year, has made arrangements for conducting an investigation into the various causes of the variations that occur in making negative exposures, the effects that they produce, and methods of controlling them.

It has been pointed out that variations of negative exposure may be attributed to the variations that occur in (1) the source of light, (2) the device in which the exposures are made, (3) the photographic characteristics of the film, and (4) the method of processing the film.

The variations of the photographic characteristics of the film may be excluded from the discussion, as, considering the fact that stock of the same general type is always used in a given studio, the speed and color characteristics remain reasonably constant.

As for the exposing devices, if the spacing of the light valve is checked properly and sufficiently often, no difficulty should be found in maintaining its characteristics sufficiently uniform. This applies as well to the slit used in the variable width systems, so that variations occurring in the exposing device may also be excluded from the argument.

Likewise, the source of light can be controlled reasonably well if proper attention is given to the adjustment of the exposure by suitably adjusting the electrical input to the lamp. However, the Committee feels that a standard method of measuring the effective exposure obtained, without having to employ a piece of processed film, is a subject that demands serious attention. Although various methods of making this measurement are in current use, it is doubtful whether these methods produce comparable, or even optimum, results.

On this account the Committee purposes to study the matter carefully, to look into the methods followed in making such measurements, and to recommend a method that would conduce to uniformity of results and the possibility of comparing these results. One suggested method involves the use of a photometer employing a photo-electric cell the color characteristic of which is approximately the same as that of the film to be measured. Such an instrument might be easily adapted to the recording machines, and would furnish a convenient and satisfactory means of controlling the exposure.

The Sound Committee has found that it is generally conceded that the most important cause of the apparent variations of negative exposure lies in the developing and processing of the negative film. Sensitometric measurements apparently fail to reveal this, due to the variations that occur in the developer with use and age; in addition various peculiarities of the developing machines themselves exercise their influence upon the density of the sound track. On account of these difficulties, the apparent exposures may vary even though the actual exposures to the light source are identical.

It is the Committee's intent to bring these matters to the attention of those engaged in the various phases of recording and processing, so that ultimately, all those variations that occur in commercial practice may be so reduced that uniformity of product will result, and that check measurements made in one phase will not be vitiated by undetected variations that occur in another.

Set Construction . . . and Recording

by **L. E. CLARK**

FOUR years ago, roughly speaking, the talking picture as a commercial product was born. Today every studio is making talking pictures exclusively. From this it would appear as though those of us who are concerned with the technical aspects of motion picture production should have behind us enough experience to know what should be done.

But do we?

In some respects, the answer must be "no." There are a dozen studios in Hollywood, for instance, and in them one will find a dozen different types of set-construction. One studio will insist on acoustically porous sets; another on sound-absorptive sets; a third will use plaster construction; a fourth, fabric; a fifth, compo-board—and so on down the line. By all the laws of logic, one of these studios should be making good recordings, and all of the others varyingly bad recordings; yet the actual facts of the case are that every studio, no matter what type of set-construction it may favor, is getting uniformly good recording—and all are managing to achieve an equal proportion of bad records.

Had this state of affairs existed four years ago, when nobody had had any practical experience in recording, it would have been only natural; but to have such a condition existing today is utterly unreasonable. By this time, we all of us ought to know just what conditions produce good records, and what conditions result in poor records.

But we don't. And—which is worse—we don't seem to do anything about it. We merely continue to accept things as they are, getting good sound and bad, without any attempt to find out why we do, or to determine, from our stock of ex-

perience, just what sort of set-construction is the best. We are all of us—recordists and art-directors alike—in the rut.

Obviously, we should snap out of it. For while we can probably continue to drift along as we are now doing for some time, getting the same results as we do now, we can't expect to make any progress. In order to progress, we must reawaken the spirit of inquiry that existed when we were all learning the business of making sound pictures. We must begin again to ask ourselves why this and that are thus and so. Sound men must begin to wonder why they prefer this type of set-construction or that one. Art directors must begin to inquire why they can't use this material or that.

Finally, we should pool our resources of experience in set designing and recording, and definitely determine what sort of a set it takes to make the best record. For it stands to reason that one type of construction must be better than others; it may be some existing type—or it may be something utterly new. But until we find it, we will be wasting our own time and energy, and our company's money, making pictures with sets that, while good enough, are still less than perfect. We are depending far too much upon the skill of the individual recordist and too little upon the laws of acoustical construction—upon facts which our four years of experience should by now have taught us.

Once we have determined these facts, I predict that our work will show a decided improvement. It cannot fail to, for we will all be able to work more freely once we are able to work from a basis of exact knowledge rather than of personal preference, luck, and somebody else's skill.



New Image Size Adopted

GENERAL adoption by theatres throughout the United States and Canada during April and May of the new uniform image frame size for motion picture projection machines, established by the Academy of Motion Picture Arts and Sciences, will mark one of the final steps in the technical transition from the silent motion picture to the talking film.

Improvements in the photographic appearance of the picture on the screen will result from the recommendations, made by the motion picture production industry's cooperative organization after two years of surveys and researches.

Hollywood studios benefit by a similar Academy uniform image frame size in use since February 15, which permits speedier cinematography and more flexible technique in talking picture making.

Theatre managers and projectionists will receive through their exchanges, detailed instruction leaflets covering the change-over to the new system. The leaflets will accompany the new picture releases, many of which already have been photographed through the new Academy uniform camera aperture.

Uniformity in the size and shape of pictures as photographed in Hollywood and projected in theatres is attained by adoption of a uniform size for camera apertures and one for projectors.

The aperture is the camera's "eye," its size and shape limiting the area on the motion picture film, which will be affected by light rays during the photographing of a motion picture. Similarly the aperture in the projection machine limits the size and shape of the area of the film, which is to be projected in greatly magnified form upon the theatre screen.

The adoption of a uniform image frame size will result in a closer coordination between the cameras of Hollywood and the projection equipment of the theatres, eliminating at one stroke expensive and troublesome variances in photographic and projection practices, which followed upon the coming of the sound device to motion pictures.

Production and theatre companies adopting the Academy uniform image size, are: Columbia, Darnour, Educational, Fox, Hal Roach, Metro-Goldwyn-Mayer, Paramount-Publix, RKO-Radio, Mack Sennett, Tiffany, United Artists, Universal and Warner Bros.-First National.

Sound-Movies As An Aid to Visual Instruction

THE greater influence of sound motion pictures is very simply explained by educators in terms of "stimulus-response-current-units-of-time."

There is a definite ratio between the strength of the stimulus to which a mind is subjected and the response elicited by that stimulus. This stimulus-response—the action that takes place when an idea is communicated to the mind—is conditioned by the speed or time required to communicate the idea and secure a response in the mind. You can secure, for instance, an equally vivid and accurate mental impression of Yellowstone Park from a motion picture that takes only ten minutes of your time as you can from an article in the National Geographic that will take you at least a half-hour to read. The sound motion picture easily exerts ten to one hundred times as powerful an impression as a written account of its subject matter could exert. Therefore the sound motion picture has a higher quality of stimulus-response-current, units-of-time, than the printed word.

Most illuminating proof of the value of sound motion pictures was offered in the demonstration held at George Washington University, Washington, D. C., July 7-10, 1931, under the direction of the office of education in the Department of the Interior. Fifty boys and forty-seven girls of grammar school age were sent by the Governor of every state in the union except Washington, to participate in this test. The children were given the Terman Group Test of Mental Ability, examinations; form A.

The range of I.Q.'s for the boys was 94 to 158, for the girls 87, to 137. The children were first tested in the usual manner on all of the subjects covered by the sound and motion picture film. They were then shown the film. After seeing the pictures, the boys and girls made an average gain of 88 points on all five tests, as a gain of about 19 points on each test. Since there are 50 questions in each test this is a gain of 38 percent.

In the Nation's Schools for May, 1930, Mr. H. D. Kitson of Columbia University presents a long paper on this problem in which the following claims are made for the talking film in schools:

1. It will prove a useful supplement alike to text-book and to teacher.

It will not wholly take the place of either. It can, however, bring the text-book to life, and it can relieve the teacher from the merchandising of information, leaving his energies free for the higher role of guide in the learning process and giving him more time for attention to individual pupils.

2. It will improve the quality of instruction.

At every point where the talking film proves at all usable, it can present instruction by the masters instead of by the mediocre upon which we must all too often lean.

3. It will make possible frequent repetition of materials, where desirable, without consuming the teacher's time for such repetition, and insuring that the repetition shall be exactly the same.

4. It will make possible a widening of the curriculum that might not be possible if teachers had to be hired and expensive equipment bought.

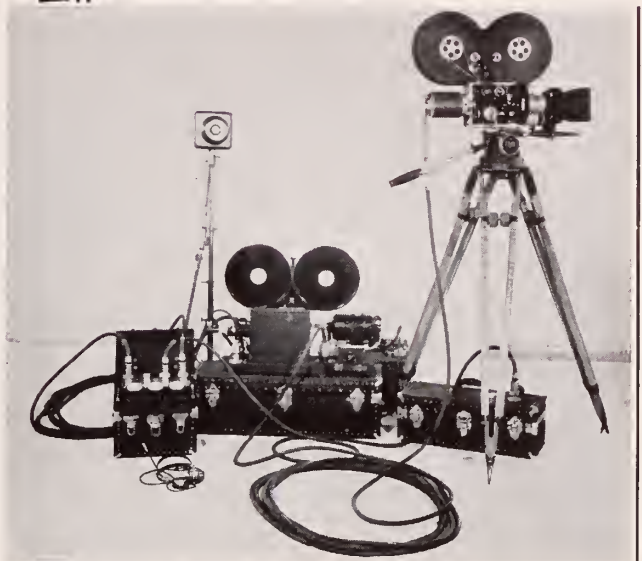
5. It will enable pupils to learn through the eye as well as through the ear—two senses that are not always adequately employed in learning.

6. It will enable us to standardize the content and quality of all instruction that should be standardized throughout a state or nation.

7. It will make possible many economies.

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Amateur Movie Making

by WILLIAM STULL, A.S.C.

ONCE the more elementary phases of cinematography—focus, exposure, and camera placement and manipulation—are understood, the most important features are lighting, filtering and composition. These three are features that will receive first consideration in the judging of the purely photographic awards in the American Cinematographer contest, for it will be accepted as almost axiomatic that entrants will be proficient in the more elementary phases of camera work. Therefore, this month we will consider these three important features from the viewpoint of the contestant.

A Little About Lighting

A great deal has been said about lighting, both in this department and in other articles in both the American Cinematographer and the Cinematographic Annuals. Most recently, my good friend, Charles Clarke, A.S.C., has said a great deal that was pertinent about exterior lighting in his recent article on reflectors, as has Jackson Rose, A.S.C., in his article on interior lighting. Therefore, since my space is limited, I can only suggest a few of the basic principles, and refer my readers to these more extensive articles for fuller details.

Most of us will recall from our earliest instructions in photography—usually beginning with a box Brownie or small Kodak—that certain definite rules were arbitrarily laid down. These rules, we found, were, however, purely for the guidance of designers, and were intended to be ignored as soon as the experience and equipment of the photographer permitted. These rules do not apply at all to cinematography, but their cinematic counterparts have one similarity in that they are made to be ignored on occasion.

Perhaps the first rule in the Brownie instruction-book was that one should only take pictures between the hours of 9 A. M. and 3 P. M. For the Brownie-user, especially the novice, this is all right; but not so for the cinematographer, who has at his command fast lenses and supersensitive film. Instead, use your camera early and late—but take plenty of time out for lunch. For in the early part of the morning and the latter part of the afternoon, the sun will be low, giving you pleasing lightings and pictorial shadows, while around noon the sun is so nearly straight overhead that the lighting is unpleasant, and shadows non-existent.

Another rule from the Brownie days was to have the sun behind the photographer. This is still the safest rule for still camera work of the Brownie type, but it does not by any means hold good for cinematography. Instead, its cinematic counterpart is to have the light come from one shoulder or the other. This is technically termed a cross-light. It gives by far the best lighting for all-around exterior work. Striking the subject as it does, from the side, it gives a very pleasing and natural effect, and suggests natural roundness to a considerable degree.

But although a cross-light is good, a back-light is often better. Back-lighting presents a few difficulties to the inexperienced, but it is worth the trouble. Summed up in a few words, all that is necessary is to have the sun behind your actors, have your lens well shielded from the direct light of the sun—either by its own sunshade, an auxiliary sunshade, or by the shadow of some convenient tree or other object. Then expose for your shadows—(use reflectors if you have them)—and there you are. Backlighting is always pictorial, and is especially effective when photographing women, as it makes the most of their hair.

Another pleasing effect—as suggested by Mr. Clarke—is to have your action take place in the shadow of some trees. With the lenses and films now available, normal shadows of this nature need give us no fears as to exposure, and the light-patterns traced by the sunshine that filters down through the leaves can be highly pictorial, especially if reflectors are intelligently used to light and model the faces of the players.

As far as interior lighting goes, the limited space here available prevents me from saying a great deal. Furthermore, the various articles recently published in the American Cinematographer and in the Cinematographic Annuals treat the subject in such detail as to make repetition here superfluous. One important development, however, has occurred since the publication of these articles: this is the introduction of the new 64-volt lamp bulbs. These enable the amateur to convert any ordinary fixture into a 500-Watt lighting unit at the cost of only a few cents for the bulb. This opens up vast new vistas in the field of interior lighting—why not try some of them?

Facts About Filters

One of the most important phases of professional cinematography is the use of color and effect filters. All too often, the amateur does not attempt these effects, or, if he does, confines himself to the use of the simple 2x and 4x filters generally available. This is unfortunate, for without the use of filters one cannot get the fullest value out of panchromatic emulsions. Furthermore, the ordinary yellow filters generally used are of little if any value with Eastman Supersensitive Reversal film, which has embodied in it already approximately the correction of these filters.

There are now available, moreover, several devices which enable the amateur to use the standard professional 2" square glass filters on his camera. The serious amateur should by all means take advantage of these to bring the endless effects of professional filtering to his own films.

The three filters most commonly known to amateurs, due to their extensive use in still photography, are the Wratten "K" series—K-1, K-2, and K-3. For use with regular Panchromatic film, or with Supersensitive negative film, these give a good range of correction. Eastman Supersensitive film, however, embodies the correction of the K-2 already, so a more extensive assortment is naturally indicated.

Working from this basis, the first filter to consider is the K-3. This gives a good, full correction for all around work. It necessitates only a slight increase in exposure.

The next filter to be considered is the G. This is orange in color, and necessitates about the same increase in exposure as the K-3. It is a very useful general purpose filter, and in addition serves to give maximum contrast in flat lights, and makes blue sky photograph grey.

The 21 filter is one which has made tremendous gains in popularity among professional cinematographers since the introduction of supersensitive film. It is very useful as it gives a rather high degree of correction without dealing too unkindly with faces. It is excellent for sunset effects, and to render yellow and orange very light. Its factor for supersensitive film is 4.

For extreme overcorrection we must use the red filters, either the 23 or 25 A or the 29 F. The A filters are used principally to turn blue sky dark grey; the heavier of the two—the 25 A—has a factor of 6 for Supersensitive film. The

(Continued on Page 47)



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Random Hints for the Cine Amateur

by **KARL A. BARLEBEN, JR., F. R. P. S.**

Cine Editor of American Photography

GIVING advice is one thing, and taking it is another. It is a noticeable fact that the amateur movie maker who heeds advice and warnings turns out creditable—if not perfect—films consistently, while he who neglects knowing his equipment more or less intimately, and is careless in his methods, makes a good picture by luck only, and this very rarely. Which are you? Do you profit by what you read, see, and hear?

One of the best bits of advice that I can give is **study carefully your instruction manual**. In case you did not get such a manual with your camera or projector, be sure to obtain one as soon as possible, then make up your mind to **study** it, don't just read it. If you have just recently purchased a camera, be sure to study the manual in detail **before you expose an inch of film**. I know this sounds cruel, but I'm certain that you will thank me for it later, for this bit of advice will be the means of saving you many disappointments later on. Practice the manipulation of the camera before you thread good film into it. Learn how the lens works, how the film is threaded into the camera, how to hold the camera steadily, how to release the motor button smoothly and easily without jarring the camera. Go over these points time after time until they become second nature to you. Only after this should fresh film be put in the camera and the first **trial** shots made. By means of a notebook, keep data regarding each scene made. In this way you will be able to see your faults on the screen and rectify them in the future. You will not be apt to make the same mistake twice if you follow this advice.

A tripod is a nuisance to most amateurs, nevertheless it forms one of the important accessories in the movie outfit. If you are particularly adept at holding the camera steady in your hands you might get away with it in the majority of cases, and to make certain that you hold the camera firmly, see to it that the elbows are pressed against the side of the body—this gives added rigidity. It is not necessary to clutch the camera closely in the hands, on the contrary, it should be held rather loosely and in a comfortable position. Holding the camera tightly tends to import a slight vibration to the film due to the tensing of the hand muscles. Care should be taken to see that the release button falls naturally and directly under the thumb or forefinger, depending upon the camera and the most comfortable position to the individual. If it becomes necessary to "fish" around for the release button, it is obvious that the camera is bound to move. And "panning"—how often has the amateur been cautioned about this in magazines and books? Yet the average amateur persists in spraying the landscape with the lens—imagining for the moment that the camera lens is a hose, they would indeed water the surrounding area far and wide. The panorama should not be indulged in for inanimate scenes such as landscapes unless it is done **slowly** and methodically. However, when the camera is following a moving object, panning must of necessity be indulged in. In this case the object should be kept in the center of the view-finder; in other words, the camera follows it according to its speed. So the advice of "panning" is good or bad, depending upon the nature of the subject being photographed.

Then the lens, how this defenseless bit of glass is abused. In cleaning—and cleaning is necessary from time to time—use Japanese lens cleaning tissue. This is a soft, fibrous material which is easier on glass surfaces than other materials commonly used for this purpose. Silk should be avoided, for despite the fact that it appears to be soft and harmless, it consists of harsh fibres as a rule which scratch minute ridges in

the soft lens glass. An old cotton handkerchief makes a second-best material for lens-cleaning, providing it is soft and many-times washed.

A lens-shade or sun-shade makes an important accessory to the lens. The majority of cine camera lenses are equipped with sun-shades when purchased, but in the event that yours does not boast of such an accessory, be certain to make one your self or buy one. A home-made sun-shade is easily made by making a stiff tube from cardboard—a pill box makes an ideal sun-shade as it is, provided it fits the lens snugly—which is later taped tight by means of lantern slide binding tape. The tube should fit the outside of the lens snugly, and painted a dead black inside as well as out. The lantern slide tape is usually a matte black and therefore requires no painting. The tube should be long enough to protect the lens from direct rays of light, yet not so long that the image on the film is vignetted, that is, cut at the corners. A few tests will determine the correct length of the tube, the focal length of the lens being the factor upon which this depends.

A lens-cap, too, is a great saver of the lens. Keep the cap on the lens always when the camera is not in use. It keeps dust and moisture off the delicate glass surface. Be it known that a lens does not work at its highest efficiency when covered with a layer of dust.

Before leaving the subject of lenses, we must mention the value of focussing. By all means take the time to focus accurately, for unless this is done, fuzzy pictures on the projection screen will result. It is all very well to depend upon the hyperfocal distance, but we should not abuse it. After all, the limit of one-thousandths of an inch circle of confusion should be maintained in cine work wherever possible, and when the amateur permits discrepancies to creep in, in the matter of focussing, he will suffer for it on the screen. If the subject being photographed is ten feet away from the camera, set the lens at the ten foot mark—not at five, nor at fifteen. Be accurate. In no other way can successful films be made. There are many whose judgment of distance is not all that it should be. Is there no help for them? Certainly. Range finders or, as they are also called, distance meters, are available which ensure correct focussing. These interesting little devices are based on the "principle of coincidence" whereby two images are fused into one, and serve as an accurate means of measuring distances. Various styles are available ranging from \$7.50 to \$17.00 in price.

Exposure, like focussing, comes in for its share of abuse with the average cine amateur. Particularly where reversal film is used, should the exposure be as near correct as possible. Here again the "know-it-all" amateur might suggest that the latitude of the emulsion will take care of any slight errors in exposure. This is true, but like in focussing, why abuse it? It is exercised enough under normal conditions without purposely being careless. The aim should be to expose as accurately as possible—and even then there will be enough work for the latitude to do. Here again many amateurs will be at a loss to know how to ascertain the right exposure. The answer is in the use of an exposure meter. Several excellent makes are available and no amateur's outfit can be said to be complete without one. Before anyone begins to ridicule the use of a meter to measure light for photographic exposure, let me here remind him that the light that we see by is not entirely the same light that we photograph by. We therefore find that judgment alone is not always reliable.

(Continued on Page 38)

Glow-lamp Recording

(Continued from Page 14)

the rectifier tube output and the grid of the control tube. The period of this timing depends upon the values of the tuned filter circuit, and is usually between one-fiftieth of a second, and one-hundredth of a second, which permits the control tube to function only in relationship to the envelope of the speech current.

Variation in Circuits Used

There are many variations in the type of biasing circuit to be used, and just so that they contain the three essential units, i.e. rectifier, filter timer, and control tube, properly adjusted,

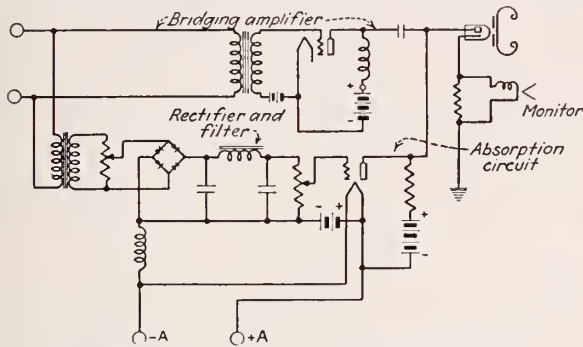


Fig. 5—Simplified circuit using a full wave contact rectifier in place of thermionic rectifier

the results will not vary. Fig. 5 shows the circuit that has been simplified by the introduction of a full wave contact rectifier in place of the thermionic rectifier. In addition, in place of the control tube being in series with the glow lamp, it is shunted across the resistor, supplying the d.c. current to the glow lamp, and provides an absorption control in place of series. One advantage of this method is that saturation may be properly controlled. Saturation is a double safeguard against overrunning the film limiting characteristic.

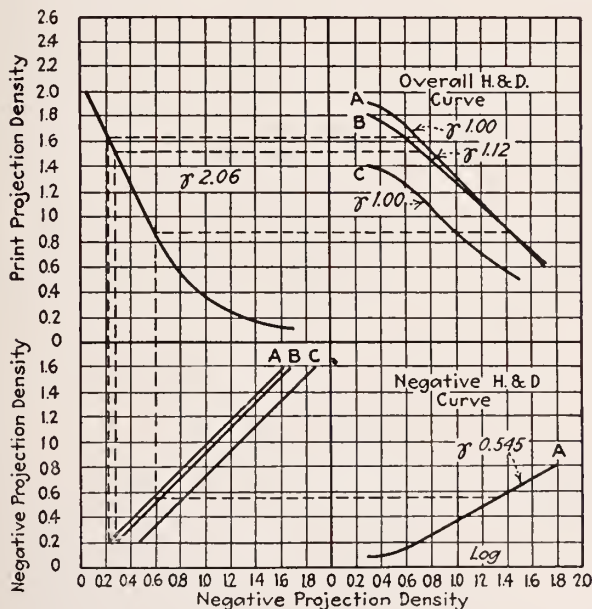


Fig. 6.

Fig. 6 represents film characteristics when employing straight line recording and processing. It will be noted that the negative characteristic is such that the optimum unmodulated transmission for full modulation is approximately 20 per cent. This value inherently gives this type of processing a reduction of 6 db. in ground noise over normal toe processing due to the

(Continued on Page 40)

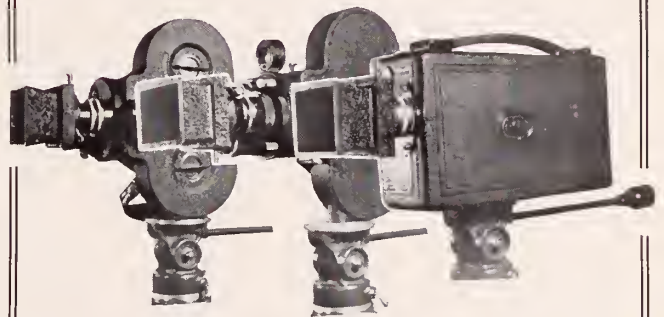
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FILTER SETS

Professional Quality 2" Square Color and Effect Filters

Much of the beauty of professional films is due to the use of special color and effect filters which, although commercially available, could not be used with 16 mm. cameras for want of a proper filter-holder. The H. M. S. matte box takes the standard professional two inch square glass filters. These provide not only the more familiar color-correction of the well known "K-series" of yellow filters, but also a wide variety of special effects, such as moonlight and night effects, fog effects, diffusion, and light and dark iris effects that have hitherto been impossible for the amateur cinematographer. The H. M. S. matte box is designed to take two of these filters simultaneously, permitting many combinations of color-correction and diffusion, color-correction and special effects, etc.

The H. M. S. matte box will fit any standard 16 mm. camera. It is mounted directly on the lens, and held in place with set-screws and special fittings, so that while in use it is rigidly in place, but instantly detachable. It can likewise be fitted to a number of semi-professional 35 mm. cameras, such as the Eyemo, de Vry, etc., and to still cameras whose lenses do not exceed 1 1/2 inches in diameter. **It is important, in ordering, to inform us as to the camera, lens-equipment, and lens-mounts with which the matte box is to be used.** Price \$7.50. A small extra charge is made in cases where the matte box is to be used with more than one lens, or where it is to be fitted to 35 mm. or still cameras or special lenses.

HOME MOVIE SCENARIOS, INC.

1220 Guaranty Building

Hollywood, California

Random Hints for Amateurs

(Continued from Page 36)

It is well to keep in mind the fact that artistic movies cannot be created until a certain degree of technical excellence has been acquired. One cannot very well make a good picture unless he knows how. These technicalities should be absorbed until they become second nature—then the mind will be free to concentrate on the pictorial and artistic side of the question. An artist may have the most wonderful ideas for paintings, but unless he is skilled in the handling of his paints and brushes he cannot interpret his ideas on canvas. In a similar manner, the amateur cinematographer must develop his skill with the camera before he is able to turn out works of his creations.

Everyone interested in making movies seems to like to make tricks. This is all well and good, but it must be remembered that clear, crisp photography is more important than tricks. As a matter of fact trickery is, in these modern times, indulged in **only where it serves some good and useful purpose**. Trickery for the sake of mystifying the audience is no longer done, for the smallest child sees through the deception easily these days, unless the trick is good, and furthermore, the complicated tricks seen on the theatre screens are made, not in the camera as most everyone supposes, but in an optical printer. Most of these tricks would be impossible to make in a camera! However, simple tricks such as reverse motion, stop motion, and a fade are really very easy in the amateur camera, but the amateur must be warned that if he does go in for this work, he must not over-do it. It is so easy to bore an audience, even of close friends, with too much trickery. It is like too much sugar in the coffee. In general the amateur will do well to resort to a trick or two only now and then, and when one is used, it should have a direct bearing on the story or subject of the picture.

Here is a matter that most cine amateurs forget. **Make each scene mean something.** Don't take a bit of film on a subject unless you mean to bring out some idea of thought. Each reel should have unity; don't string a bunch of scenes together and expect your audience to enjoy it. Figure out for yourself just how this works out. In planning a story, a photoplay in other words, you would have a definite objective in view, a story to tell the audience in picture form. You would not think of stringing the scenes together regardless of their sequence; then why do it in any film? Yet this is exactly what too many amateurs do, and later wonder why their friends don't show any particular interest in their films. Every scene, regardless of its subject material, should present some idea. Where a number of scenes are included, they should have a bearing upon each other, and lead up to a logical ending. You will be surprised at the improvement in your films if you will just stop to ask yourself; "Why am I taking this scene?" "Does it mean anything?" "How will this scene appear on the screen?"

Editing—a fascinating indoor sport that not every amateur enjoys. By means of editing, a poor picture can often be turned into a good one. Editing is the cutting out of poor scenes, bad portions, inserting titles, etc. No film should be shown to an audience until after it has been carefully edited and titled, for the difference is amazing between the edited and unedited film. Make this test, just for the fun of it, and convince yourself of this fact. Editing requires only a few simple tools—a rewinder, a bottle of fresh cement, a few extra metal reels, and—some common sense. The cement should be fresh as stated, for old cement is worse than useless. In order to preserve cement, be sure to keep the stopper tightly corked in the bottle when not in actual use, for when cement is exposed to air it loses its power rapidly and evaporates, later becoming thick and "soupy," after which it will not hold, and a poor splice is worse than none for it can actually cause damage to much of the film during projection.

Many amateurs make their own titles and get a great kick from doing so, while others send their titles out to be in a laboratory. The home-made title is naturally the best, for the

amateur takes greater pride in it because it is some of his own work. Various titling outfits are to be had, or the amateur can make up his own outfit from various odds and ends in the house. Artificial light is most satisfactory, for it can be depended upon time after time to be of the same intensity, which cannot be said of sunlight. And while the regular reversal film may be used for titles, positive film is suggested because it gives more snappy and contrasty results—which is just what is needed in this work. Besides, positive is cheaper to buy, and short strips can be developed at home in much the same manner that a roll film from the family Kodak would be developed. Positive film may be purchased on spools or it may be had in bulk, in which case the amateur will have to wind his film on some spare camera spools in his darkroom—if he has one. In either case, positive film will result in more satisfaction. To make direct titles, black letters on a white field should be used, and where a negative is desired, white letters on a black field should be the rule.

Projection is often said to be the final link in the chain of the motion picture, and it is. It is the final step, and its importance to the picture in general cannot be over-estimated. Keeping in mind the fact that poor or faulty projection can ruin the finest photography, the amateur will at once see how necessary it is to know something about this work. The projector, like the camera, should be studied. A clear, pure white light should result when the light switch is turned on. Any dark corners, rings or spots, or various colored sections mean that the bulb in the lamp house is not accurately adjusted. Don't ever project a film with a projector in this condition. Keep the condensers and objective—lens—clean, and always have a spare lamp on hand in the event that the old one burns out suddenly—it usually does this at the most unexpected times,—during the middle of an interesting reel as a rule. A better plan still is to watch the lamp and discard it when it begins to show signs of blackening, and the filaments appear considerably sagged. The average lamp should stand up for about one hundred hours—some go more, some less—barring accidents and careless handling. Focus the projection lens to the best of your ability, for a fuzzy picture on the screen is nothing to be proud of. Keep the screen clean and dirt-free. Do not try for too large screen areas, for while huge proportions are possible with some projectors, this practice is not the best for the average home entertainment. A small area, say four by five feet or thereabouts is more to be desired than a seven by nine foot screen image. The small screen will in all cases be brighter, sharper, and clearer, while the larger the screen becomes, the dimmer, more hazy, and indistinct the pictures will be. Then, too, with a small screen, the audience will be enabled to sit nearer to it. Various focal length lenses may be had for the majority of projectors, but the average amateur will not be apt to have need of more than the regular lens already on his projector.

There are many things to be learnt by every amateur concerning amateur movies—that's what makes it such a delightful hobby.



S. O. S. Buys Amplitone Stock

THE entire stock, plant, and fixtures of the Royal Amplitone Corp., 109 W. 64th St., New York, has been bought by the S.O.S. Corp. of 1600 Broadway, New York, according to announcement of the S.O.S. Corporation.

At one time, the Royal Amplitone Corp. was considered among the leaders of the Independent Sound Field, thousands of their Disc and Films Systems having been sold throughout the world. Among their larger users was the Publix Theatres Corp., while many other circuits had adopted the Royal Sound Systems in the early days of the Talkies.

Users of Royal Amplitone Equipment are informed that a complete stock of parts and replacements is being carried by the S.O.S. Corp., and will be available as long as there is any demand.

Supersensitive Kodacolor Film Announced By Eastman Company

ALL users of 16 millimeter film will be interested in the announcement just made by the Eastman Kodak Company of a new Super-sensitive Kodacolor film. This new film has a greatly increased latitude and a range beyond the "direct sunlight" scope of the old Kodacolor.

In other words, the film is twice as fast as the old film and makes possible the making of pictures in color on cloudy and dull days and in the shade. Bright sunlight is no longer necessary to capture the beauties of nature's colors. The new film produces even richer, more vivid and more pleasing rendition of colors than ever before, and with only fair lighting. For the traveler this should be a real source of delight, for it means that he need not miss beautiful shots in color just because the day happens to be cloudy or dull as he is passing by the beauty spots which he probably will never visit again. The following exposure guide has been issued by the Eastman Company for use with the new film:

Light Classification	Exposure	Camera Speed
Dull or in Open Shade	No N. D. Filter	Half
Slightly Cloudy	No N. D. Filter	Normal
Direct Sunlight	N. D. 1	Normal
Intensely Bright	N. D. 2	Normal

Early or late in day, increase exposure by changing N. D. Filter or decreasing camera speed.

Dull—Sky completely overcast, but good light. Do not confuse with **Very Dull**.

Open Shade—Subject lighted by large area of sky.

Slightly Cloudy—Sun just obscured, no distinct shadows cast. Also for clear days when only part of subject is in sunlight.

Direct Sunlight—Full sunlight, distinct shadows cast.

Intensely Bright—Unusually brilliant sunlight, without large shaded areas.

The new film requires a different ratio cap than has been used in the past, and this will be included with the film.

New Sound Head

FRANKLIN Hansen has been appointed head of Paramount sound department, replacing Wilmore Harkess, who resigned. Harry Reynolds steps into the spot vacated by C. E. Browne as chief of prop department.

New Filmo Single Control Projector

ANNOUNCED for April delivery is a new Filmo projector, the Model M, selling at a price lower by far than that of any previous Bell & Howell projector.

Despite the low price, the Model M is asserted by the manufacturers to be a quality machine built, like other Filmo models, for years of service, and projecting brilliant, steady, flickerless pictures.

It is a single control projector, and simplicity of operation is a prime feature. Say the makers: "Just thread the film and press the single switch. Movies form upon the screen. A turn of the lens brings the pictures into sharp focus. There are no non-essential controls to confuse the least experienced user."

The mechanism and the optical system are essentially the same as those used and proved for nine years in other Filmo models. In appearance it closely resembles the Filmo 57 projectors. Brilliant illumination, even upon a large screen for audiences running into the hundreds, is provided by the newly developed 300-watt, 110-volt projection lamp.

The Model M is mounted upon a broad, secure, aluminum base, which forms the bottom of the carrying case. The neat, sturdy, black fabric leather covered case is set down over the fully erected projector and clamped to the base. There are compartments in the case for films, reels, and projector accessories.

Film is rewound rapidly by a 2¼ to 1 geared rewind. Large sprockets, plus the highly perfected and precise film movement mechanism, insure the film against damage. Framing is automatic. The lens is instantly interchangeable. A tilting screw facilitates centering the picture on the screen. The projector is adaptable to Kodacolor (under Eastman license).

The Model M has the standard Bell & Howell single tooth shuttle movement. The same projector may be had with a double tooth movement, and when so equipped is known as Model N. The price of both models is the same.

New Travelogue Firm

CONTINENTAL Films, just organized by Tom White, has opened a studio and offices at 1611 Cosmos St., Hollywood, and plans to produce a new type of long and short travel pictures. White, formerly with Paramount and who recently directed the Huntington Expedition, has stationed cameramen in remote parts of the globe with instructions to shoot only material that has human interest value.

Add Perfect Sound

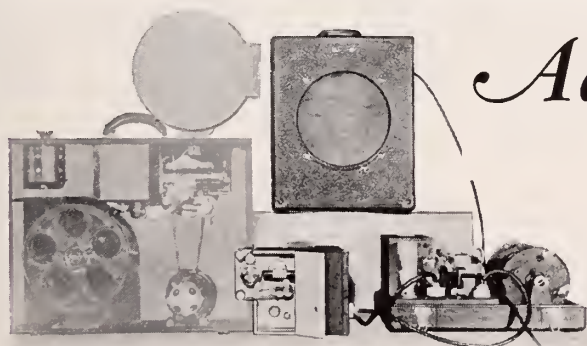
to your favorite 35 mm. Portable Projector. No need to scrap good portable projectors. "SYNCROFILM" sound heads are now made to operate with any or all makes of standard portable 35 mm. projectors.

No changes necessary to projector mechanism. Easy to set up and operate. Smooth running drive insures true reproduction without waver or distortion. Highest grade materials and workmanship insures dependability and long service.

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The Syncrofilm Portable Sound Head
The low cost will surprise you

New Eclair Sound Camera

A REMARKABLE new sound camera has just been developed by the well known French cine-engineer, M. Mery, whose earlier Eclair cameras have long been familiar to cinematographers on both sides of the Atlantic. The new model, according to descriptions by A. P. Richard, writing in our French contemporary, "La Cinematographie Francaise," and to letters written us by M. Georges Benoit, A.S.C., who has inspected the camera, combines many radically new and valuable features for studio and independent recording with that desideratum of engineers, recordists and cinematographers everywhere: absolute silence. According to M. Benoit, the camera does not require any sort of covering, either blimp or bag. It can, in fact be used, uncovered, only twenty inches from the microphone.

Two features are immediately noticeable: that, for the first time in the history of the Eclair line, the familiar inside magazines have given place to outside magazines, and that the camera is double, using two films and two movements, one for the picture and one for the record. Aside from these two innovations, the new model retains the majority of the familiar Eclair features. Since the internal magazines have been eliminated, however, the actual size of the camera-head is somewhat reduced; therefore, the six-lens turret, which characterized the previous models, has been changed to a smaller four-lens one, and the double focusing mechanism, which allowed the operator to focus either on a ground glass or on the film, has been dispensed with in favor of a prismatic magnifying tube allowing focusing on the film.

The 1000 ft. magazines are of the individual-retort type, avoiding the extra bulk of the double-block type more conventionally used in this country. Accordingly, but one empty retort need be carried for each film-system. Expanding spools are used in the magazines to facilitate the manipulation of the 1000 ft. rolls.

The movement is placed in the middle of the case, between the sound and picture heads. It is operated by a 1/10 H.P. triphase, synchronous motor, which is noiseless. The motor may be reversed, stopped or started by a switch at the rear of the camera.

The film movement differs considerably from the earlier models. Due to the use of the outside magazines, the threading is considerably more simple, and is similar to that of conventional American studio cameras. The pilot-pins and intermittent pressure-plate of the earlier models have been abandoned in favor of a roller-type, fixed pressure-plate and a claw acting on but one side of the film; the opposite side of the film moves against a spring pressure-bar which holds the film absolutely centered on the proper axis.

Focusing is done directly on the film, through a prismatic magnifying tube. The focusing-scale is, as usual with Eclair cameras, a polygonal bar visible through a slot at the rear of the case, and in this model is decagonal, allowing ten different lenses to be calibrated on the one scale. Just above the camera door is a small lever which not only indicates whether or not the prisms are in position for focusing, but also prevents the camera from being operated when in focusing position.

The camera is equipped with a dissolver, which allows fades of any length to be made either automatically or by hand.

The sound head is extremely simple. It is contained in the right-hand side of the camera, utilizing separate magazines and glow-lamp recording. The film is fed down from the magazine over a large main sprocket, upon which it is held by two rollers. While passing over this main sprocket, the film passes under a microscope which focuses upon it the image of a slit illuminated by the recording glow-lamp. Synchronism is positive since the sound and picture main sprockets are mounted on the same shaft.

Glow-lamp Recording

(Continued from Page 37)

halving of the unmodulated transmission. It will be further noted that it is possible to increase the print density to values as low as 4 per cent and 5 per cent.

In order to fully understand the effect of noise reduction in relationship to toe and straight line processing, reference is made to Fig. 7. In this the density of the unmodulated sound track is plotted against relative noise reduction. It will be noted that in the upper regions of transmission, noise reduction is not linear with decrease of transmission, curving off at a point approximately 65 per cent. As this value falls in the fog region it is of little importance. The amount of noise reduction is based on the ratio between maximum signal unmodulated track and minimum signal unmodulated track. In the case of toe recording, normally this is the ratio of 40 per cent X' to 20 per cent X'' , or theoretically 6 db. reduction.

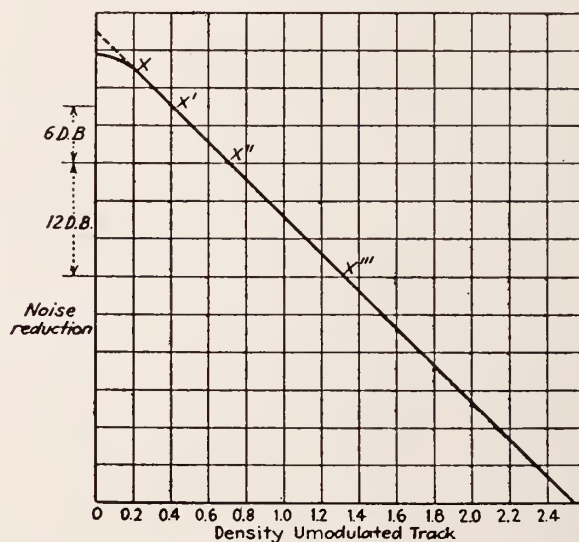


Fig. 7—Density of the unmodulated sound track plotted against relative noise reduction

In the case of the straight line print, it will be the ratio of 20 per cent X'' to 5 per cent X''' , or approximately 12 db. It will be found in practice, however, that the actual observed reduction is not quite as great. While the modulation value of toe recording is inherently higher, the net reduction of surface noise and signal-to-noise ratio is greater when using straight line methods.

It is the contention of the author that the reduction of surface noise is not the advantage to be gained by biasing methods, but rather it is the increase in range between signal and noise. At the present time the average auditorium background noise, which consists of audience movement, ventilation, etc., is approximately—15 db. Any reduction of film surface noise below this value will be wasted, it should, however, be applied to the other end of the volume spectrum.

In the average theatre, having a capacity of approximately 2,000 seats, +20 db. level into the horns is sufficient to create the illusion of a large orchestra, and +30 db. is sufficient to create a natural illusion of gunfire. It is, therefore, desirable that the maximum range of 45 db. between surface noise and peak signal be attained. This is greater than is at the present time attainable with the existing systems. It is believed, however, that with the adoption of methods producing sound tracks similar to the ideal, as represented in Fig. 1, that ranges of 60 db. on the film will be possible.

Printed through courtesy of "Electronics"

The Sound Film Editor

H. J. McCORD, chief film editor at Warner Brothers-First National Studios, brought out some interesting phases in the field of film editing at a recent meeting of the Technicians branch of the Academy of Motion Picture Arts and Sciences. In part he said:

"The film editor, in order to successfully cut or edit a sound motion picture, must have a background of intelligence which enables him to know the best dramatic, comedy, melodramatic or farce tempo of the scene,—slow tempo may make the scene draggy and uninteresting, while some other tempo may on the contrary be too racy or fast, by reason of which the characters on the screen tell their story too quickly and interest is lost.

"When a picture is too slow in unfolding its theme or story, the film editor is required to use all of his intelligence to eliminate the slow portions and speed up the action. He must at the same time keep in mind the fact that the story should be tangible and easy to understand after these eliminations have been made.

"Practically the same thing applies to a story which is too fast. The cutter must, by adding other film between dialog scenes, slow down the tempo of the entire sequence.

"The use of dialog during dramatic scenes is of utmost importance to the finished picture. When a dramatic scene is in progress it is oftentimes best to have the dialog of the character delivering the speech come over the scene of those who are listening to it, so as to get their reaction to what is being said. At other times, it is more dramatic to stay with the person who is speaking, because much of the drama and force may be lost if the facial expressions and tone of the voice is not seen and heard at the same time. The same technique is oftentimes used in comedy as well as in drama.

"The film editor can do practically the same tricks with his film and dialog as he did in the days of silent pictures with

titles. For example—if the scene he is working on has a great amount of dialog and eliminations have to be made because this dialog repeats itself, or is too cluttered up with words, he can, if he has the necessary film, (closeups, medium shots, long shots, etc.) move this film and dialog around in such a way as to cut out speeches or have speeches originally intended for the latter part of this scene appear in the opening of the scene and vice versa.

"Many times, the cutter is in difficulties, when cutting from one scene to another in dialog, especially when the dialog is spoken rapidly, as he has to cut on a syllable in one scene and in the next scene he cuts on another syllable. Of course this is taken care of somewhat when the picture goes through the process of dubbing and unwanted words are painted out of the sound track.

"Another thing left up to the intelligence of the cutter, is the matter of cutting into scenes, extra dialog, or wild dialog which was not recorded at the time the picture was photographed. In other words, some dialog is eliminated at times, because certain words do not register well or are not audible; while in other instances extra words are required. This wild dialog may be recorded a week later, and the cutter has to cut this into the scene as originally made with sound and picture, and match the lip movement as closely as possible, or he may use a part of another character's close-up and allow a certain portion of this new dialog to ride through it, giving a perfect illusion, as though this was originally synchronized with the picture.

"Many times a star's voice is not suitable for singing, so a wild recording is made using a professional singer while the star merely mouths the words of the song in the picture. A clever film editor, by the use of appropriate angles, can match this wild recording almost perfectly, so that the audience is unaware that the singing is done by any other than the star."



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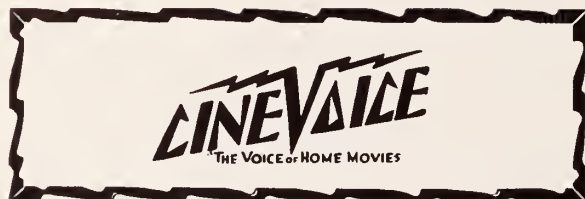
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The BELL & HOWELL COMPANY will also present two equipment prizes—First, a choice of a Filmo 70DA Camera, listed at \$280.00, or a Filmo Model J. L. Projector, listed at \$298.00. Second, a choice of any Standard Cooke Telephoto Lens, priced from \$60.00 to \$95.00. To be given to prize winners who made their pictures with a Filmo. The EASTMAN KODAK CO. will present a Model K Cine Kodak, with a f.1.9 lens, complete with carrying case, priced at \$150.00, for the finest example of photography in an out-of-doors picture regardless of whether it wins a cash prize or not and without consideration of story subject. MAX FACTOR MAKE-UP STUDIOS will present one of the famous Max Factor Make-Up Kits, completely equipped, to the winner of first prize of \$500.00.



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The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. A total of **\$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of \$500.00 for what its judges consider the best 16 millimeter picture submitted in this contest. \$250.00 will be given as second prize; \$150.00 as third prize; and \$100.00 as fourth prize, a total of \$1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after

the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9½ millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

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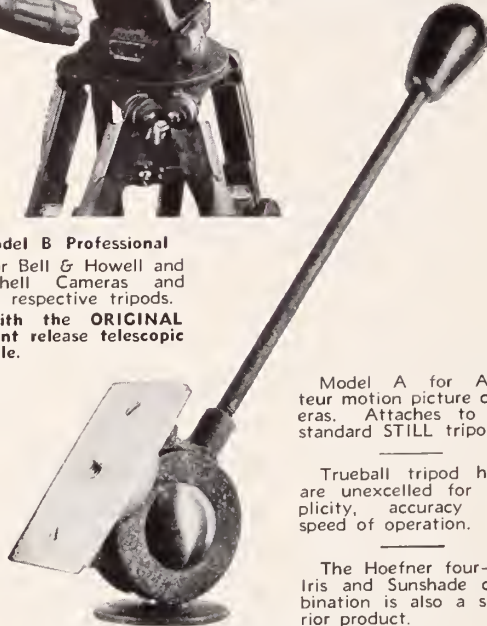
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Television Invention Reported in London

A NEW television invention that may have far-reaching results has been revealed in London to film trade papers. The new invention seems to overcome the great difficulty of getting enough light at the receiving end of the apparatus to illuminate a large area, such as a cinema screen.

The new apparatus consists of a specially designed projector, projecting film at the normal rate of speed. In conjunction with this projector is a television receiving apparatus. Each complete "scanning" of the image is photographed on the film, which is developed and fixed at once on the same machine somewhat on the "Photomaton" principle. By a simple adjustment in the circuit of the television receiver, the photograph will be a "positive," this doing away with the need of printing.

The received film is shown in the ordinary way, and can be used to project almost instantaneously details of current events, such as boxing matches, etc. The sound may also be received by a parallel channel, and photographed on to the film for reproduction simultaneously.

One advantage of the method over direct television is, that the film constitutes a permanent record, and can be used again.

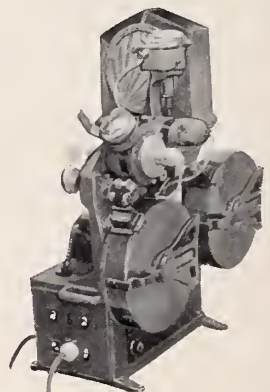
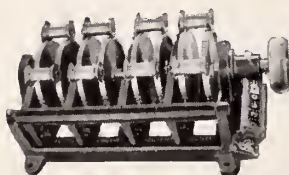
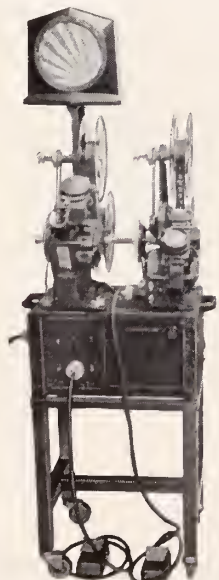
Electric Motor-Drive For the Eyemo

A NEW ELECTRIC motor unit has just been developed for the Eyemo camera by the Hollywood branch of the Bell & Howell Company. The motor is attached to the camera, and drives it through the regular hand-crank shaft. The built-in governor of the camera is used to regulate the speed throughout the wide range now available on these cameras. The motor will run the full 100 foot roll held by the Eyemo through without stopping. Power is from batteries, either 12-volt or 110-volt direct current being used. The motor is very light, sufficiently so that the camera may still be used in the hand or from a light tripod.

Equipped with this new accessory, the Eyemo should prove doubly useful to newsreel and commercial cinematographers, explorers and aviators. Perhaps its most important function will be its ability to drive the camera at the standard sound-film taking-speed of 24 frames per second, making scenes up to 100 feet in length, for aerial use, and for use in commercial, industrial, news and travel films intended to be used with dubbed-in sound, for the motor-drive robs the camera of none of its well-known portability.

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New Lens For Leica

NEWS of interest to the cinematographer, both amateur and professional, is the announcement by E. Leitz, Inc., New York, of the recent perfection of a new ultra-speed lens for the Leica camera with an aperture of $f/1.9$, and a focal length of 73 mm. This lens is called the "Hektor." With this newest addition to his battery of lenses, the cameraman will be even better equipped than ever to run his test shots, and with a lens of speed equal or approximate to the fastest on his turret.

It is amazing how quickly this unique little camera "took" in the studios, once someone discovered its usefulness. The Leica achieved its original popularity among the amateur "still" workers, but it was soon discovered that its ability to use standard cine film of short lengths, and its precision construction and fine optical equipment fitted it perfectly to solve the problem of test shots on location or in the studio.

The Model "C" Leica, with its interchangeable lens feature, and its highly corrected lenses of various focal lengths and speeds, seems to have become an integral part of many cameraman's outfits. Jackson J. Rose, over on the Universal lot, is rarely seen without his Leica, equipped with the lens shade and filter holder of his own design.

There are a number of features of this outfit that explain its popularity among movie men. It can be loaded with the same kind of cine film the cinematographer plans to use for his picture, and lenses are available in focal lengths corresponding to those on the regular outfit. With the filter holder referred to the regular two-inch filter can be used, or two together in combination or in conjunction with gauze mats. Another thing, when the Leica focal plane shutter is set at the one-fortieth second notch the cameraman has almost exactly the standard sound camera exposure.

One of the strongest points of all about the outfit is the exceedingly compact and efficient film tank for developing strips of cine film up to about six feet in length. This tank is just about five or six inches in diameter and four inches high—small enough to be stuck in almost anywhere when out on location, and once it is loaded in a changing bag, all the subsequent operations of developing, washing and fixing can be carried out in daylight. Regular laboratory formula developer can be used, and thus the operator has a thoroughly practical means of testing his set-up, from film to fixer.

The negatives made by the Leica are just twice the size of the regular single frame, lengthwise, and the regular 24 mm. in width. This size is large enough so that a contact print on positive film can be viewed without too much eyestrain, and makes an excellent sample to hand to the director.

Enlargements made with the Leitz enlarger produce excellent paper stills. Due to the highly corrected lenses used on the Leica, paper enlargements to 11×14 inches are not at all unusual, and some have been made as large as two by three feet. Seven out of the pictorial section of this year's "CINEMATOGRAPHIC ANNUAL" were Leica pictures.

Any information desired on the Leica camera is gladly provided by E. Leitz, Inc., 60 East Tenth Street, New York City, or by Spindler and Sapppe, San Francisco, the West Coast representatives.

New Color Background

NATALIE M. Kalmus, color director of Technicolor Motion Picture Corp., is using a new line of colors on her chart for the coming Warner-First National picture, "Doctor X." Dull, mysterious, spooky colors will be used to give an effective background to this mystery thriller. Much interest is directed toward the picture because it is the first story of its type ever filmed in Technicolor.



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CONTINENTAL NEWS REEL

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Around the Globe

(Continued from Page 17)

walls with the moat between, watched over by a grim old castle which crowns a rocky hill at one end of the old town. The buildings and streets have been altered but little. Wandering around the quaint old streets or looking down on the old town from the castle one could easily imagine himself to be living in the period of six centuries ago. We found two favorite inns; one the Bratwurstglocklein, a tiny little place, which has been leaning against the side wall of a chapel since it was built in 1313. It was frequented by Albrecht Durer and Hans Sachs in their day. It is famous for its sausages and generous steins. The other inn we liked to visit is a large place in the basement of a three story building built in 1498 and used ever since as a hotel and eating place. My advice to anyone who may be traveling in southern Germany is not to miss Nuremberg.

In Berlin we had good weather, a good deal of sunshine and not too cold even though it was January. One day I called at the "Ufa" office, made myself known and said I should like to be permitted to visit their studio. I was introduced to Mr.



Mr. Gilks and Commodore Vanderbilt

Heymann who took me out to the plant, a thirty minute train ride from town. He escorted me through the whole studio, not hurriedly but allowed me plenty of time to watch them rehearse and shoot scenes on the various sets. I could not help but be impressed by how much care and time was spent on each scene more than is usual in an American Studio. I met Carl Hoffman, Ufa's best known cameraman. Unfortunately he cannot speak English and I cannot speak German. At least I could enjoy watching him work. I saw two of his pictures while in Europe; "Yorck" and "Congress Dances," both, in my opinion, very good pictures and finely photographed. On the sets they have a greater assortment of inkie and arc lights than is ever customary here and to my surprise they use far more light than is customary here.

I could not help but notice the different attitude toward visitors in the German studios as compared to ours. They welcome you with open arms and you do not have to show a pass at every corner; a really friendly spirit.

(Continued on Page 48)

Amateur Movie Making

(Continued from Page 34)

F filter has a factor of 12, and turns blue sky almost black. All of these red filters are excellent for getting extreme over-corrected effects of cloudscapes, and for making night effect scenes by daylight, but they must be used with great caution in landscapes due to the extreme overcorrection they give.

The 56 B filter is a green one, which makes foliage appear very light. It is an excellent, soft filter for landscapes. The filter factor of the B is 8. Used in conjunction with the 25 A it is useful for extreme night effects.

Due to the nature of the reversal process, the best results with any color filter will always follow upon a slight degree of underexposure. In using negative film, however, a slight overexposure is advisable when using the G, 21, A and F.

A far more detailed discussion of filtering will be found in the article "Making Tests With a Small Camera," by Jackson Rose, A.S.C., in the latest Cinematographic Annual, while an intensely valuable treatise on the practical aspects of filter factors and exposures was written by Emery Huse, A.S.C., and Gordon Chambers in the December, 1931, issue of the American Cinematographer.

In addition to color filters, there are also the relatively new neutral density filters, which are valuable for softening harsh contrasts, and several varieties of diffusing filters, for producing soft-focus effects, and fog filters for creating hazy and foggy effects. The range of pictorial effects possible through combinations of color, neutral density, diffusion and fog filters are endless, and can only be learned through experiment—which is, by the way, far more interesting than learning through a printed description such as this. No definite rules can be given for the use of filters, not only because their use depends so much upon subject and lighting conditions, but because each cinematographer will have his own ideas as to what degree of correction is preferable. This difference of opinion is well illustrated by an experience of the writer's. One day last week, when Hollywood was favored with some unusually photogenic clouds, I made a series of test scenes with a newly marketed line of filters. Subsequently, I showed the reel to several cinematographers and laymen; no two of them preferred the same filtering!

The subject of composition might be likened to an ocean, for if one wishes to plumb its greatest depths, he would find it all but unfathomable, while at its edges it need not overwhelm the understanding of the merest novice. Fortunately, space does not permit me to attempt to go deeply into the subject here; fortunately, I say, because too frequently when one attempts to do so he finds himself making pictures in a purely mechanical way rather than spontaneously. To my mind, the best definition of composition is that given, years ago, by Edward Steichen, who said, "Simply make your pictures easy to look at!"

The simplest way to do this is to remember that, in looking at a picture, the human eye begins at the lower left-hand corner of the field, and travels diagonally upward. Therefore, take advantage of this in planning each scene. If you find that your principal object of interest does not lie along this path, you can use some small object, strategically placed, to direct the eye to it. It need not be obvious: it may be merely a twig, a stump, or a shadow; it may be a splash of light, a mountain, or a man. But the important thing is to determine where the eye is to go, and then to lead it unostentatiously thither. One of the best articles on cinematic composition was that written by Daniel B. Clark, A.S.C., for the first edition of the Cinematographic Annual. And I can sum up the question no better than by quoting Mr. Clark's phrase: "Art is not **what** you photograph, but **how** you do it!"

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Around the Globe

(Continued from Page 46)

After my visit at the studio I was accompanied back to Berlin by Mr. Heymann who then offered to get me theatre tickets, take me around the city or do anything he could to make my stay there pleasant. I certainly appreciate and thank him for his consideration and hope I may return his kindness some time in Hollywood.

Enroute to Paris we stopped over at Cologne to see their beautiful Gothic cathedral and attend an International exposition of interior decoration.

While in Paris I had an interesting visit with George Benoit, who is with Pathe-Natan Company. George looks very well and of course is happy in his native country. Ten days is a very short time to spend in Paris but with the help of a friend of mine, Buckley MacGurrin, an American artist, who has resided there a number of years, I believe we got the most possible out of our short stay.

Arriving in England seemed almost like coming home. To be able to understand the language was such a relief after struggling along trying to understand and make oneself understood with little or no knowledge of the language of the country one is in. Visiting relatives took me over a good bit of England, Liverpool, Chester, Stratford-on-Avon, Rugby, Guilford, Oxford and London. Went out to the studio at Elstree, also to the Associated Radio Pictures plant. I met a number of men in London in the picture business who were formerly in Hollywood. In England now the aim seems to be to make a picture which will not only have good box-office value in England but in America as well. Not to turn out an inexpensive picture just to comply with the quota law. Therefore in the future there will probably be more time spent on their pictures than there has been in the past in the most cases.

I arrived back in Hollywood just eight months after leaving, having traveled 36,000 miles and circled the globe. A great experience from which I shall derive a great deal of pleasure the rest of my life.



Art

(Continued from Page 25)

cinematography. The photography of American pictures, for instance, is vastly different from that of German films, or Russian films, or British or French films. This is a most encouraging sign, for if at any time the cinematographers of any country should find themselves artistically stagnating they would be bound to find encouragement and a fresh stimulus in the distinctive efforts of their foreign fellow-workers.

But such a condition of artistic stagnation seems very unlikely. Cinematography—throughout the world—seems possessed of an indomitable artistic spirit. This has recently been demonstrated by its amazing recovery from the setbacks that occurred with the advent of sound. At the moment, cinematography had reached its highest artistic development; then, almost overnight, the restrictions of sound set it back, so it seemed, ten years or more. But instead of being disheartened, cinematographers refused to admit the setback, and have, despite all obstacles, so completely recovered that the cinematographic treatment given ordinary program pictures today is vastly superior to that given the greatest special productions of the pre-sound era. With such a spirit behind it, the future of cinematography is assuredly safe.

Have You Ordered
YOUR CINEMATOGRAPHIC ANNUAL
Vol. 2?

Los Angeles Amateur Cine Club

ROBERT B. Brown, of Long Beach, won first prize and I. O. Levy, of Los Angeles, won second prize in the monthly uncut film contest of the Los Angeles Amateur Cine Club at the March meeting of the club. The meeting was held at the Bell & Howell Company building, Hollywood.

An unusually fine program was furnished and two special 16 mm. films were shown that were outstanding. These were, "The Life of a Bee" and a film prepared by the technical staff of the University of Southern California. The first named picture employed lavish use of telephoto and microscopic shots. The U.S.C. picture, prepared under the supervision of Dr. Loshner, who gave an explanatory talk during the showing, was also replete with excellent telephoto and microscopic shots and was a splendid example of this type of work. Joseph Dubray, A.S.C., head of the Hollywood branch of the Bell & Howell Company, gave an instructive and interesting talk on telephoto lenses. The April meeting will be held on one of the sound stages at the studios of the Fox Film Corporation. It was announced that many Fox stars will be present and a crew of studio electricians will be on hand to furnish lights while the club members make pictures of the screen celebrities. The National Theatre Supply Corporation will be the hosts, arrangements for the meeting being made by Mr. Ralke of that organization.

Portland Cine Club

AN UNUSUALLY interesting 16 mm. picture was shown to the members of the Portland, Oregon, Cine Club at its March meeting, held at the Benson Hotel. The picture, made by Dr. Segris, a member of the club, is an educational subject called, "Your Teeth and Health." Dr. Segris has worked several years in the making of the picture which has just been completed.

New Home For Educational Project-O

EDUCATIONAL Project-O Film Company, formerly quartered in the American Bank Building, Los Angeles, moved last month to new offices in the Fairfax Theatre Building, 317 North Fairfax Street, Hollywood. Many friends attended the opening of the new quarters on Tuesday evening, March 15. Phil Meisenzahl is manager.

Free Monograph Tells How Talkies Helped Boost Piston Ring Sales 23 Percent

AN INCREASE of 23 percent in 1931 business over that of 1930 is reported by the Perfect Circle Company, of Hagerstown, Ind., makers of automobile piston rings. "There is no doubt but what our motion picture advertising has done a great deal toward making this sales record possible," says George W. Stout, advertising manager of the company.

The Perfect Circle Company employs a talking motion picture called "The Magic Circle," presented by portable talkie reproducer machines, and much interest has developed with regard to the methods used in making the picture, arranging the talkie showings, and in rolling up definite sales as a result of these showings.

A monograph entitled "The Perfect Circle Plan, a Practical Application of Talking Motion Pictures to a Selling Problem" has been prepared and will be sent free on request to business executives who wish to inform themselves as to how the Perfect Circle Company carries out its picture program. The monograph should be of value to any company contemplating the use of talking pictures in its sales or sales promotion work. It can be obtained by writing Industrial Division, Bell & Howell Company, 1801 Larchmont Ave., Chicago, and simply asking for "The Perfect Circle Plan."



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Florida Opening Drive to Bring Production to State

FLORIDA may produce a "statewide" motion picture as a means of pointing out to producers the advantage of using Florida as a site for production. The plan has been advocated by the committee on the development of the motion picture industry, of which Trenton C. Collins, Tampa, is chairman.

He is calling on all sections to aid with an "aggressive campaign" the drive to bring film production to the state of Florida. One move proposed calls for the donation of property to be used as studio sites.

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THE AMERICAN CINEMATOGRAPHER

Hi-Power Optical System Doubles Illumination of Victor 16 MM. Cine' Projectors

THE VICTOR Animatograph Corporation, Davenport, Iowa, announces that, after several months of research and experimentation, it has developed a new Optical System of exceptional efficiency which sets an entirely new standard for brilliancy in 16 mm. projection. It is claimed that this new Hi-Power System gives twice the illumination of the regular Victor Optical System when the same projection lamps are used.

The constantly growing popularity of 16 mm. films and projectors among educational, religious, and industrial users of motion pictures has resulted in demands for more and more light to meet the needs for large, brilliant images and for projection throws of one hundred feet or more.

Remarkable progress has been made by the lamp manufacturers in developing high intensity lamps of unusual power. It is evident, however, that the size and heat limitations imposed on the lamp manufacturers by the size and design of 16 mm. projectors has so restricted them that there is no great possibility of their being able to add appreciably to present lamp efficiencies.

The new Victor Hi-Power Optical System is, therefore, an extremely important step forward, in that it literally doubles the power of all present 16 mm. projection lamps. It accomplishes this by gathering and transmitting to the screen twice as much of the light from the lamp as is transmitted by the regular Victor Optical System. It is said that the consequent increase in illumination will more than satisfy present and prospective users of 16 mm. projectors who have been demanding greater illumination to meet daylight projection and auditorium requirements.

The Victor Animatograph Corporation had already been successful in mastering projection throws of more than one hundred feet with its regular Optical System when using 375 watt-75 volt or 165 watt-30 volt lamps. With the Hi-Power Optical System capable of doubling the amount of light utilized from these lamps, it is evident that the illumination it makes possible is sufficient to meet every reasonable demand of non-theatrical users.

The new Victor Hi-Power Optical System consists of a Super Reflector adjustably mounted in a special lamp house extension a set of precision-ground Bull's Eye Condensers and a more powerful projection lens. These parts may be easily installed in a few moments by any Victor owner and are available at a very reasonable cost.

The Hi-Power Optical System will not replace the regular Victor Optical System in all models, due to the fact that it provides greater illumination than is required for home use or where large pictures and long projection throws are not required. Therefore, the Hi-Power System will be provided in new Victor equipments only on order and at a slight extra cost.

Typewriter For Composition of Film is Invented

EMMANUEL Rubenstein, Hollywood composer and scenarist, and his brother Enoch, of Syracuse, N. Y., have patented a "musical typewriter," to speed production of theme songs and musical accompaniments for pictures. The device will be manufactured in Rochester, N. Y., if negotiations with a firm there are concluded. Production is expected to get under way in the near future.

The typewriter has 53 keys, bearing all necessary symbols, and is equipped with a special ratchet enabling the composer to write either up or down the scale without using the line shifts. The inventors claim speed, better "copy" and better music, as the resulting advantages of the use of their machine.



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BRULATOUR BULLETIN

What's What

EASTMAN FILMS

Who's Who

AL GILKS JOINS GROWING RANKS OF GLOBE-TROTTING CAMERAMEN

AL GILKS, newest recruit of the globe-trotting cameramen, has returned to Hollywood after covering more than 40,000 miles with Cornelius Vanderbilt on the Commodore's 265-foot yacht *Alva*. Although but a year old, all around the old world which it circled the craft is known for its striking symmetry and its ability to help the skipper outguess the whims of old nature in unsmiling mood.

So it was entirely in accord with the fitness of things that in the *Alva's* spacious storage quarters there were many thousand feet of Eastman Super Pan all set faithfully to record a never ending change of scene and also likewise to help its cameraman outguess the whims of that same old nature.

The privileged few who have seen some of Al's photography readily appreciate his enthusiasm over the entire trip. He exposed many thousand feet of that same Eastman Super Pan on subjects of wide and varied interest. Just at present he is dickering with a major studio on a feature production.

What the Cameramen Are Doing to Hold Hollywood on Map

Charlie Glouner

Busy head of the camera department at Universal, is all hopped up over a bumper crop of peach blossoms at his big ranch. Charles is a determined guy, and is spending all of his spare time at the ranch, and frankly admits that he is guarding the blossoms against the possible attack of supervisors.

Virgil Miller

Big boss of the camera outfit at Paramount, is hobbling around with a bum knee and can't even play golf— Ask him the reason and all you'll get is "Horse Feathers!"

Bob Kurrle

Is turning in some swell stuff on "Jewel Robbery" at Warner Brothers-First National, after having turned in a creditable job with "Winner Take All." Al Green is still Bob's second, while Johnny Shepek holds down the job as assistant.

Venturini Off for Japan

Dan Venturini, Paramount director, sailed last week for Japan, carrying with him a supply of Eastman Super Pan upon which will be photographed backgrounds and atmosphere shots for the forthcoming Paramount production, "Madame Butterfly."

Gregg Toland

Who made an over-night success at United Artists, has just finished three in a row at Warner-First National, "Play Girl," "Man Wanted," and "Tenderfoot." Scheduled to return to United Artists for resumption of his success there. Bert Shipman, his second, and Perry Finnerman, assistant.

Fred Jackman

Has returned from Memphis, Tennessee, where he supervised the photography of some very unusual background shots for the forthcoming Dick Barthelmess picture at the Burbank studio.

George Barnes

Has been loaned to the Fox Studios, where he is photographing "Society Girl," being directed by Sid Lanfield.

Jimmy Howe

Who clicked in a big way and shot his salary over the scale with "Transatlantic," and then followed with "Surrender," is now photographing "Man About Town," which is Director Jack Dillon's first picture on his new termer at Fox Hills.

Mike McGreal

Johnny Arnold's snappy assistant at M-G-M, is drawing a lot of scowl from the still men on the lot. The reason— Mike has gone slightly nerts with a Graflex, and now he knows all about overexposure 'n everything. So far he hasn't hit any static.

Will Cline

Is splitting his time between Universal where he is doing the athletic series, and Standard, where he is photographing Ben Holmes' famous classics.

Ten Years a Long Time— in the Picture Biz

Ten years is a pretty sweet record for any man to hold with any organization. Art Lloyd, cameraman at the Roach Studios, has just rounded out his tenth year, and isn't even looking for a job any place else.

Sol Polito

Whose "Five Star Final," "Union Depot" and other Warner-First National Productions have made him a photographic institution on that lot, is now doing a very interesting picture with Director Al Green under the title of "The Dark Horse." Title notwithstanding, there is not a saddle, a pair of chaps, a lasso nor even a bale of hay in the entire list of props. Sol is carrying about with him a rabbit's foot and a secret yen that Bill Koenig will find some excuse to send him to New York. Funny guy, Polito.

Lee Garmes

Whose "Shanghai Express" and other Von Sternberg pictures skyrocketed Lee to the top of the ladder, is currently supervising the photoplay of "Strange Interlude," with Norma Shearer at M-G-M; after which he will move his outfit to the Fox Hills Studios, where he starts a long term contract.

Jackson Rose

Is back at Universal where he made such splendid impressions with his photography of "Seed" and "Reckless Living." He is now doing "Radio Patrol," with Dick Fryer as his second, and Walter Williams and Ted Hayes as assistants.

Charles Lang

At Paramount has just finished "Thunder Below," following his success on "No One Man." His seconds are Bob Pittack and Guy Bennett, his assistants Tommy Morris and Cliff Shirpsier.

Ernie Miller

Chief Photographer for Fanchon Royer Productions, is spending his brief time between pictures on his ranch.

Dave Abel

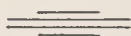
Has a nice trio to his credit at Paramount with "Rich Man's Folly," "Ladies of the Big House," and the recently completed "The Miracle Man." His second is Ernie Lazlo, and Jimmy King is his assistant.

Charlie Marshall

"The Flying Photographer" who made such a swell job of the air sequences of "Hell Divers" at M-G-M, is giving Paramount the benefit of his artistry and experience on "Sky Bride."

THE MOTION PICTURE INDUSTRY is moving ahead.
There have been many improvements in quality in the last few months and we may expect that when the industry again reaches a normal production the Technicians will have kept pace with the times.

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It has truly professional capabilities, with its seven speeds, ranging from 4 to 32 frames a second and including an accurate 24-speed, its speed conversion dial giving correct lens stops for any speed, and its three-lens turret head. It possesses amateur convenience, with its spring motor, its easy portability, and its simplicity in operation.

And now, in addition to the spring motor and hand crank, it can be equipped with an electric motor, 12 or 110 volt, which gives through an entire 100-foot film the even 24-frames-a-second speed essential when sound is to be "dubbed" in later. It can also be fitted with a 400-foot magazine.

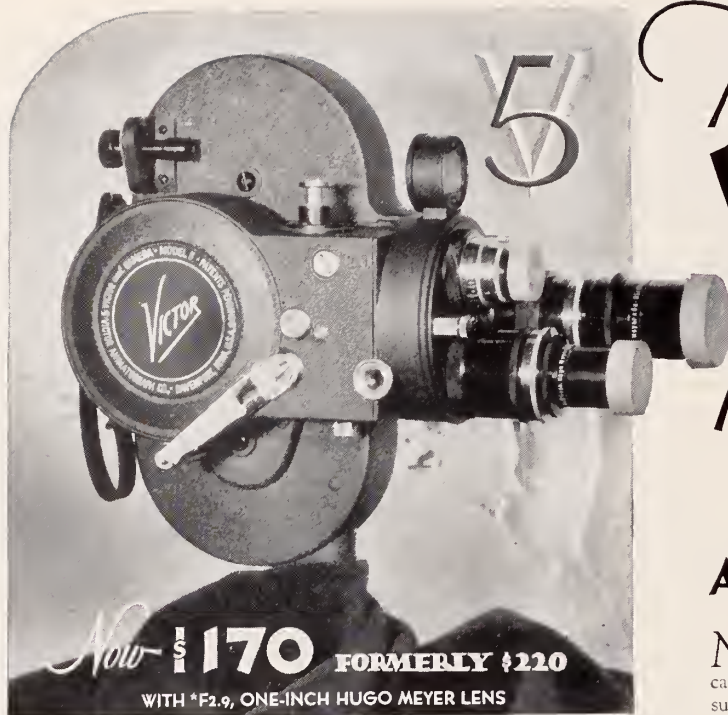
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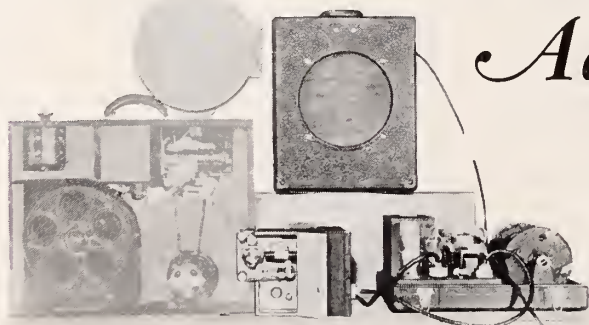
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Character Make-up

by **JACK PIERCE**

Head of Makeup Dept., Universal Studio

IN SO far as character makeup is concerned, the work of the makeup artist is closely akin to that of the cinematographer. Each is creative art of the most intricate order. Each demands that the artist have, in addition to technical ability of a high order, the imagination wherewith to visualize the effect desired, and a thorough understanding of dramatic values by which to judge the desirability of these effects from a story viewpoint. For, even as the best photography—judged solely as photography—can be out of place if not properly keyed to the story requirements, so can the best individual makeup be worthless if it does not perfectly fit the story.

Character makeup may be divided into two main classes: the common, run-of-production type—such as turning out Chinamen, Indians, and Hindus or building beards to dress a set; and real character-study makeups, in which the makeup artist literally creates a character over the frame-work of some star or featured player, to play a prominent role in a picture. The former is relatively easy, for all that is needed is technique and experience; certain mechanical operations—a dab of paint here, a touch of liner there, a bit of tape somewhere else, and an inch or two of crepe hair will automatically produce the desired result, just as, in camera work, a “broad” here, a rifle there, so much front light, so much back light, and so much top light, will put enough light on a set to assure an exposure.

The latter variety, however—true character makeup—is not so simple. It is pure creative art, just as is getting unusual effect lightings. There are no rules to follow; nothing to guide one except the story requirements and the physical materials at hand. The result must be the outcome of experience and technique guided by artistic sense and imagination.

In creating such a makeup, the makeup artist must first of all know what the story requires. Then he must have time to study the actor in question, and visualize what can be done to make that actor into the desired character. What are the most prominent features of the actor? What does he rely upon most in putting his points over? What should be the most prominent features of the character? Should the actor be concealed by the makeup, or is his normal personality a near enough approximation of the desired character so that the makeup be merely a filling-in of the more sketchy details? And, finally—in such parts as the “Monster” in “Frankenstein” especially—is every detail technically correct?

The creation of such characters requires time. First of all, there must be sufficient time for the makeup artist to familiarize himself with the story requirements. Secondly, there must be time for him to delve into the technical, anatomical and psychological background of the character. Thirdly, there must be an abundance of time for him to study the player, and



Sidney Fox, featured player



Sidney Fox made up as Chinese girl

visualize the exact methods that must be used to make him what is wanted. This last is vitally important, regardless of how well the artist may know the actor already. To cite an instance that is fresh in everyone's memory, let me take Boris Karloff. I have known Boris for a long time, and have the very highest opinion of him both personally and professionally. But this does not by any means obviate the need of studying him anew for each part that he plays. After all, the mere fact that I created his makeup for "Frankenstein" did not greatly help me in creating the one he wore in "The Old Dark House." I was working with the same physical framework, it is true, but in one case I was working for one result, and in the other I was seeking an entirely different effect. Therefore, in each case, I had to spend many days studying Mr. Karloff's physiognomy—not simply as Boris Karloff's face, but as a framework upon which to create the desired character. If you study the illustrations, which show Mr. Karloff as he is, as the Monster, and in his new role in "The Old Dark House," you will see that in each case the character is basically different; in one, the eyes, for instance, are treated one way; in the other, quite differently, and so with every feature.



Boris Karloff, as he appears normally



Boris Karloff, made up as the Monster in "Frankenstein"

Once this study is completed, and I have, either through imagination or research—or a combination of the two—succeeded in visualizing the character, I prepare sketches of my conception of the character, and submit them to the director. His conception of the part, influenced as it is by consideration not alone of the one part, but of the whole picture, may differ slightly from mine. Either of the two may be the better; sometimes a combination of the two will prove better than either individually; sometimes we have to test both makeups photographically in order to decide. But when this decision is finally made, the rest is purely routine. The makeup can be applied identically day after day throughout the picture, with no further reference to anything other than my memory, save where there must be fresh wounds or bloodstains, when, for exactness, I refer to still photographs.

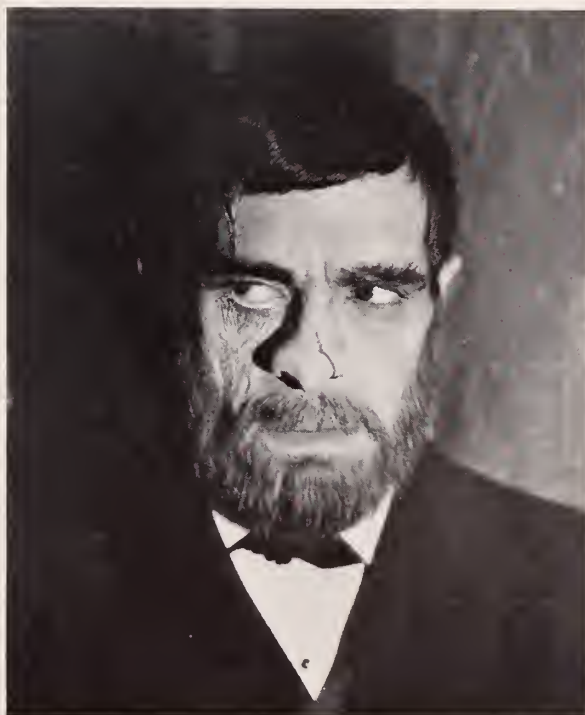
Next to the ability to completely visualize a character makeup, technical research plays the largest part. Sometimes this leads one into strange paths. In "Frankenstein," for instance, I spent months of study on the anatomical possibilities of the monster alone. I studied every operation that would be necessary to create such a body from human "spare parts," as

was related in the story. I studied the physical effect of each, and strove to reproduce them in Mr. Karloff's final character. Every line, every scar, every peculiarity of contour had to be just so for medical reasons; the eyes, for instance, were exact duplicates of the dead eyes of a 2800-year-old Egyptian corpse!

For other parts, this research may be more on the psychological side than the anatomical. In such a picture, for instance, as "Back Street," I studied and visualized the physical result of the emotional and psychological experiences undergone by the leading characters during the course of years. In "Resurrection," I had to study not alone the results of the lapse of years, but of the psychological experiences and environments of the characters played by John Boles and Lupe Velez.

All of these details must be coordinated with the one basic requirement of any good makeup: that it must not look like a makeup. The sole reason for any makeup—and particularly a character makeup—is not to proclaim the skill of the makeup

(Continued on page 43)



Another picture of Karloff in character makeup

The New Vinten Camera

England's Latest Contribution to Motion Picture Mechanics

ONE of the most important mechanical developments in the motion picture industry of Great Britain within the past few months is a new 35 mm. motion picture camera recently placed on the market by W. Vinten, Ltd., of London, and which is claimed by its makers to be the last word in silent cameras. The camera has many unique features and has created much enthusiasm among cinematographers of England.

To make for quietness of operation, a new claw and register pin motion, all obtained from one crank shaft, is used. There are no cams or cam slots, and there are only three pairs of gears for the camera and two pairs for the counter. The gears are of spiral construction and are made of a self-lubricating material. To avoid any film scratching, no pressure is applied to either side of the film.

The film gate, with its register pins inserted in the film, can be moved away from the aperture port and a focussing glass brought in correct register to the same port. This is effected by means of knob "A," in the accompanying illustration. With the gate in this position the camera is locked. By means of two prisms and an optical system in the sight-tube a large-sized image of the full picture given by the lens is obtained, and by twisting knob "B" a very large magnification of the center of the picture is obtained for critical focussing. The image always appears the right way up through the sight-tube.

One of the prisms is rotatable through 90 degrees by means of the knob "C" so that a magnified image obtained by the plain matching lens inserted in the viewfinder "D" can be seen through the sight tube. This has a distinct advantage in "follow" shots of having a brighter image than when looking through the film.

The spiral lens mounts are of new design with the following chief features: The lens is not revolved when focussed. The iris scale is always visible. A bronze nut running in duralumin gives excellent wearing conditions and the threads are not ex-

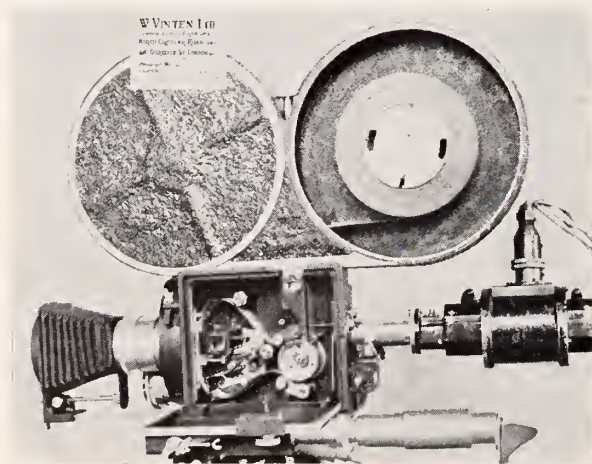
posed to dirt. The lens mounts are of such a diameter as to take any large aperture lens, but the camera is built to take a 24 mm. lens and still allow the turret to revolve. A rising front fitting is incorporated in the turret lock. Provision has been made so that the viewfinder may be removed and a direct wide vision finder can be inserted in its place. The 1000-foot Vinten magazines are interchangeable with Bell & Howell magazines. A front attachment arm with support column and bellows sunshade may be attached to the camera by a depressing lever. The driving motor can be attached direct to the sleeve, "E" and this sleeve also takes the S. S. White standard flexible drive.

Incorporated in this sleeve is a mechanical fuse. This fuse slips and makes a warning note in case the film jams or the operator forgets to return the gate to the taking position. This fuse is adjustable to suit the starting torque of the motor, and match sticks or pieces of wire are not needed.

A silent friction tripod is part of the equipment of the new camera. It can be instantly locked in any position and the weight of the camera and magazine is compensated by enclosed springs. The friction tripod head can be removed from the legs by the movement of one lever and placed on a "baby" tripod.

In designing this new camera color photography was not forgotten, for provision has been made for supplying extra gates for bipack work. These do not interfere with the existing gate.

Two systems of electric motor drive are provided. One is for the newsreel man who relies on play-back system. This is made with rheostat and tachometer and 16 volt battery, for speed of 16 to 24 pictures per second. The other is a DC—AC interlock system for the camera and recorder which is driven on the direct current with a 48 cycle AC interlocking system from a 50 volt battery.



The new Vinten camera, showing movement



Mr. Vinten, left, and Al Gilks, A.S.C., with the new Vinten camera

Sound Film Editing

by **MAURICE PIVAR**

Supervising Film Editor, Universal Studios

PERHAPS the least heralded of all occupations in the motion picture industry is that of the film editor, commonly known as the "cutter." Unlike most of the technical branches of the business, film editing does not follow any set routine but each picture and even each sequence in a picture presents a different problem to the editor. This is especially true today when situations are tied up and involved with the sound element.

The film editor must not only know how to "cut" and assemble a picture, but he must apply intelligence and ingenuity to his work. He must not only know the routine of editing but he must thoroughly understand and know screen values—dramatic, comic, and photographic—and take full advantage of the film he has in hand so that it will appear to the audience to the best advantage. A cutter devoid of the ability to feel dramatic and comic impulses would be of little assistance to the director even though he might be fully versed in the mechanics of his work.

Those of us who are familiar with productions, are aware that the average feature picture involves anywhere from thirty thousand to sometimes three hundred thousand feet of film, and it requires efficiency and system for an editor to be able to place his hands on any particular scene at any time, without having to wade through thousands and thousands of feet of film.

The systems used for keeping track of this excess film vary in the different studios. We at Universal, through the co-operation of our laboratory and the production department, have simplified this phase of cutting to a great extent. After each day's work on the set, the script girl sends to the cutter a copy of her record of the day's work. This record states clearly the number, the length and the dialog of each scene. This is kept on file from day to day by the cutter. Time and again during the course of editing a picture, a director will prefer a scene changed from one angle to another and sometimes, there is a question as to whether such a scene may have been shot and to avoid wading through the film to verify it, the cutter instead refers to the script girl's notes.

In addition to the script girl's record, a laboratory record is also kept by each cutter. This record is sent through with the film, commonly termed "dailies," which is printed up each day by the laboratory. The edge numbers and scene numbers of each scene printed is marked on the record. Quite often during the editing of a picture a scene is either damaged or more often cut up by the changing of cuts to the extent that a reprint is necessary for practical handling. The use of the laboratory records and the script girl's daily record facilitates the ordering of reprints and the checking of various scenes in the picture.

The routine involved in the preliminaries of editing a picture varies somewhat in the different studios. The majority, however, favor the use of separate sound track and separate action during the process of editing. There are several studios, however, which use movietone prints or—in other words—prints which have the sound already printed on to the action. This method may be more economical from a standpoint of saving of film, but the writer is in sympathy with the use of separate sound track, for the reason that it offers a greater latitude in the editing of a picture.

The first step in connection with editing is, as a rule, to synchronize the sound track with the action. This is accomplished by the use of a specific mark or punch at the

beginning of each scene. This punch or mark is made on both the action and the respective sound track and it is necessary, therefore, to see that both punch marks start at the same point.

To simplify the handling of separate sound track and separate action, the use of numbers on the edge of the film—spaced one foot apart—is necessary. These numbers are made in duplicate and the same number that appears on the edge of the sound track film also appears on the edge of the action film—both numbers being in the same relative position from the start mark.

With the "dailies" synchronized and properly numbered, they are then shown to the director or any other executives interested in the production. Where there are more than two takes to a particular scene, the director, as a rule, selects the one he prefers and this is the one which is set aside for use in the picture, the others being kept on file.

The efficient editor as a rule starts to edit his picture with the completion of the first sequence. All of the film of this sequence when completed is assembled in continuity order. This gives the editor an opportunity to familiarize himself thoroughly with the film on hand and enables him to visualize the cutting possibilities of the sequence. The editor's objective, then, is to cut this sequence to the best advantage—utilizing such angles as he feels will present the sequence in the most effective manner on the screen.

This procedure is continued as the director shoots his picture, so that within a few days after the director has completed his picture, it is practically ready for him to see in what is termed "first or rough cut." Most directors are thoroughly familiar with cutting and at times are of great help to both the picture and the editor. The director, having made the picture, naturally may have his own ideas with regard to the way certain angles should be used to portray certain scenes. In shooting the sequence, he may have been striving for a certain dramatic or comic value in the situation. Then oftentimes, the editor may cut it from his own point of view. This, naturally, brings about discussion and—with an intelligent editor—the director at times may find that the editor has already gotten the most out of the situation with the film in hand.

The best results are generally obtained when both the director and the editor work in close harmony and are open-minded to suggestions.

The picture in first cut, naturally runs considerably over the general releasing length and before any final eliminations are made, the picture is presented to the public for its reactions; all further cuts or eliminations being determined by the results obtained when shown to an audience. Quite often certain situations which look very appealing during the process of cutting, fail to impress the audience and, likewise, certain situations which apparently do not seem to carry much weight in the studio projection rooms, bring a strong reaction from the audience. In this way, the director and everyone else concerned with the picture is enabled to judge, through the audience reaction, the screen values of all the situations in the picture, later removing such situations which prove non-essential.

Before a preview is held, however, there is a considerable amount of mechanical work that the picture must go through. First, there is the work of embellishing and refining the various cuts. Then the matter of adding sound effects and music and also the injection of certain photographic effects in the shape of lap dissolves and other effects to which the picture may

lend itself. Today, with the perfection of what is called the "optical printer," these effects—such as lap dissolves, etc.—which ordinarily were made on the sets by the director and which proved very costly because of the loss of time involved, are made on these optical printers after the picture has been completed.

Some studios have a special department which handles the injection of sound effects and music into the picture. At this studio, we find it more desirable to have the editor himself supervise this phase of the work, for the reason that he is thoroughly familiar with the film and also with the particular desires of the director and the manner in which they are to be placed. Our sound department concentrates on the making of the effects desired and also in the handling of the necessary music. There is also a close cooperation between our sound department and our sound library. When the editor is in need of certain sound effects or music for his picture, this particular track is ordered through the sound department. This department first refers to their files in the sound library and if the track is not already in the library, one is made. However, when a picture calls for considerable music or some special type of music, the sound department of course places this in the hands of a specially assigned musical director.

After both sound effects and music have been supplied the editor, he supervises the lining up of these particular sound tracks and both the effect tracks and the dialog tracks go through the process of what is called "dubbing"—which is also handled through the Sound Department by special operators for this purpose.

The work of dubbing presents quite an interesting phase of motion picture production today. Dubbing has simplified to a great extent the making of sound pictures. Where originally sound effects were recorded at the time the scenes were taken, today all sound effects are placed in the picture after the scenes are taken—in fact, after the picture has been otherwise completely edited.

The disadvantage of trying to shoot a scene which carries a decided musical background is that the cutting of this particular sequence is confined to the continuity of the musical score and eliminations cannot be made without causing a noticeable break in the music. The disadvantage of recording sound effects at the same time dialog is being recorded is two fold; it interferes at times with the coherence of the dialog and results in a changing volume of the various effects when the scenes which comprise the sequence are placed together. In fact, each cut is noticeable by the change in volume of this background noise. Once a scene has been recorded with sound effects in the background there is nothing which can be done mechanically to change the balance of sound effect and dialog should the dialog be crowded out by the effect.

When dialog and sound effects are recorded on separate tracks the prominence of the dialog may be emphasized to whatever degree desired in the dubbing. The balance between the two may be varied at will, making the sound absolutely flexible in the hands of the dubber, and enabling him to at all times keep the dialog intelligible above the general noise level.

It might not be amiss at this point to emphasize the importance of preparation before actual production of the picture. With the advent of recorded sound to the motion picture, the latitude of the editorial department has been minimized to the extent that where originally the possibilities of realigning and recutting silent scenes were unlimited, we are now confined within the limits of the dialog. Today a script before it is put into production should be letter perfect because once the dialog has been put upon the film there is no other recourse than to make retakes should this dialog show up poorly on the screen.

The question of preparation also applies to the timing of scenes. In the old silent days, all a director had to watch for was the position of his actors when changing from one angle to another. He had to make certain that he picked up his actors in the same position when changing his camera angle.

Today, he must not only watch the position of his actors but also the dialog that is being spoken while the actor is in a certain particular position. One of the editor's greatest trials is the carelessness of some directors who over look that very vital point. To illustrate more clearly let us assume that the director is shooting a scene where an actor is seated at a desk, and the actor during the scene arises and crosses the room. During this business the actor has spoken certain definite lines while he was arising, and certain others while he was walking across the room. Let us further assume that this scene is shot in a long shot. The director then wishes to shoot the same scene from a closer angle. Quite often, we will find that in shooting this closer angle, the actor did not repeat the lines simultaneously with the action in the long shot. We will probably find that he did not say the first line as he arose from the desk, but as he walks across the room—with the result that the editor is compelled to play the scene in one angle and, even though there may be a decided advantage in going to a closer angle, this cannot be done without showing a break in either the action or the dialog. This of course would be bad from an editorial standpoint and could not be allowed.

The practical director today is one who appreciates thoroughly the limitations of cutting. Directors, however, differ considerably in their methods of shooting. Some directors safeguard themselves by overshooting their picture. That is: They will shoot a scene from many different angles for protection purposes. Other directors, being perhaps more familiar with the cutting of pictures, cut most of their scenes in the camera. Both have their advantages and disadvantages. From the producer's standpoint, overshooting a picture is very expensive—and from the editor's standpoint, undershooting a picture involves untold grief.

A great many obstacles arise as a result of a director trying to cut his picture in the camera. In his effort to economize, the editor finds himself in the position at times, of being limited in the cutting of the picture to the manner in which the scenes were actually shot by the director and unless the director is absolutely perfect in his timing, we find that in trying to connect certain scenes either the action or the sound does not match. It is always a very good expedient for an economical director—in attempting to cut his scenes—to overlap at least part of his dialog and action when progressing his scene through various angles and to particularly watch that the dialog is timed perfectly with the action in each angle that he shoots.

The actual mechanical features involved in the editing of sound pictures are relatively simple. They involve the use of the synchronizing machine, the moviola, the splicer and the rewind. All of these devices are easy to operate and require only a minimum amount of experience to attain more or less perfection in their handling.

The synchronizing of film by edge numbers has been explained previously. In addition, each editor is supplied with a synchronizing machine, the purpose of which is to enable him to keep his film in synchronization as he handles it. This device can best be described as a machine which carries anywhere from two to four sets of sprockets. The editor, while handling his film, places both the sound track and the picture film over these sprockets—keeping the film in synchronization at all times while he is passing it from one reel to another during its handling. Should the film by any chance slip over the sprockets, the editor has the edge numbers by which to guide himself, thus avoiding the necessity of going back to the original start mark in order to check the sound track with the action. Most editors, however, do not use the synchronizing machine much but prefer the Moviola (film viewing and checking device). The practice is to place the sound track underneath the action, both passing over the same sprocket wheel. Inasmuch as the greater part of the sound film is clear, the

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John Arnold Heads A. S. C.

For Second Term

JOHN Arnold, head of the camera department at the Metro-Goldwyn-Mayer Studios, was re-elected President of the American Society of Cinematographers at the annual election of officers held on April eleventh. This is the third time in the history of the organization that a president has been elected for a second term, and is a tribute to the excellent work of Mr. Arnold during the past year.

Other officers elected were: Arthur Miller, First Vice-president; Frank Good, Second Vice-president; Elmer Dyer, Third Vice-president; George Schneiderman, Treasurer (re-elected); William Stull, Secretary, (re-elected). Mr. Schneiderman is holding his office for the second successive year, and held the same office some years ago. Mr. Stull holds his office for the third successive year.

The new Board of Governors chosen consists of: John Arnold, John Boyle, Dan Clark, Elmer Dyer, Arthur Edeson, Frank Good, Alfred Gilks, Fred Jackman, Victor Milner, Arthur Miller, Hal Mohr, John Seitz, William Stull, George Schneiderman and Ned Van Buren.

The installation banquet was held on Monday evening, April 25th, at the Uplifters Club, Santa Monica, with one of the largest attendances in many years. This meeting was one of the finest and most enthusiastic gatherings of A.S.C. men since the inception of the organization, and judging from the spirit displayed, the coming year should be most successful.

Elmer Dyer was master of ceremonies at the dinner. In his introductory remarks he reviewed briefly the events of the past year and pointed out the work that has been done in the

society and the society's publications, and urged all to give President Arnold the same cooperation during the coming year that was given him in the past.

As was the case last year, President Arnold declared that he has no "platform" to present; declaring that in his belief the laying of a platform by a President is not the best policy because so many platforms break down.

"My promise to the society," said President Arnold, "is to continue working hard and sincerely for the interest of the society and all of its members. I have tried during the past year to work along this line and shall continue so during my present term." He then briefly outlined some of the aims he has in mind and which he is working to attain.

The following committees have been appointed for the coming year: Public Relations: John Arnold, Joseph Dubray, Georges Benoit, H. T. Cowling, Harold Sintzenich, E. L. Dyer, Ariel Varges, Frank Zucker, Charles Bell.

Research and Education: Harold Rosson, chairman, Dr. L. N. Dieterich and John F. Seitz.

Membership: Harold Rosson.

Production: Daniel B. Clark.

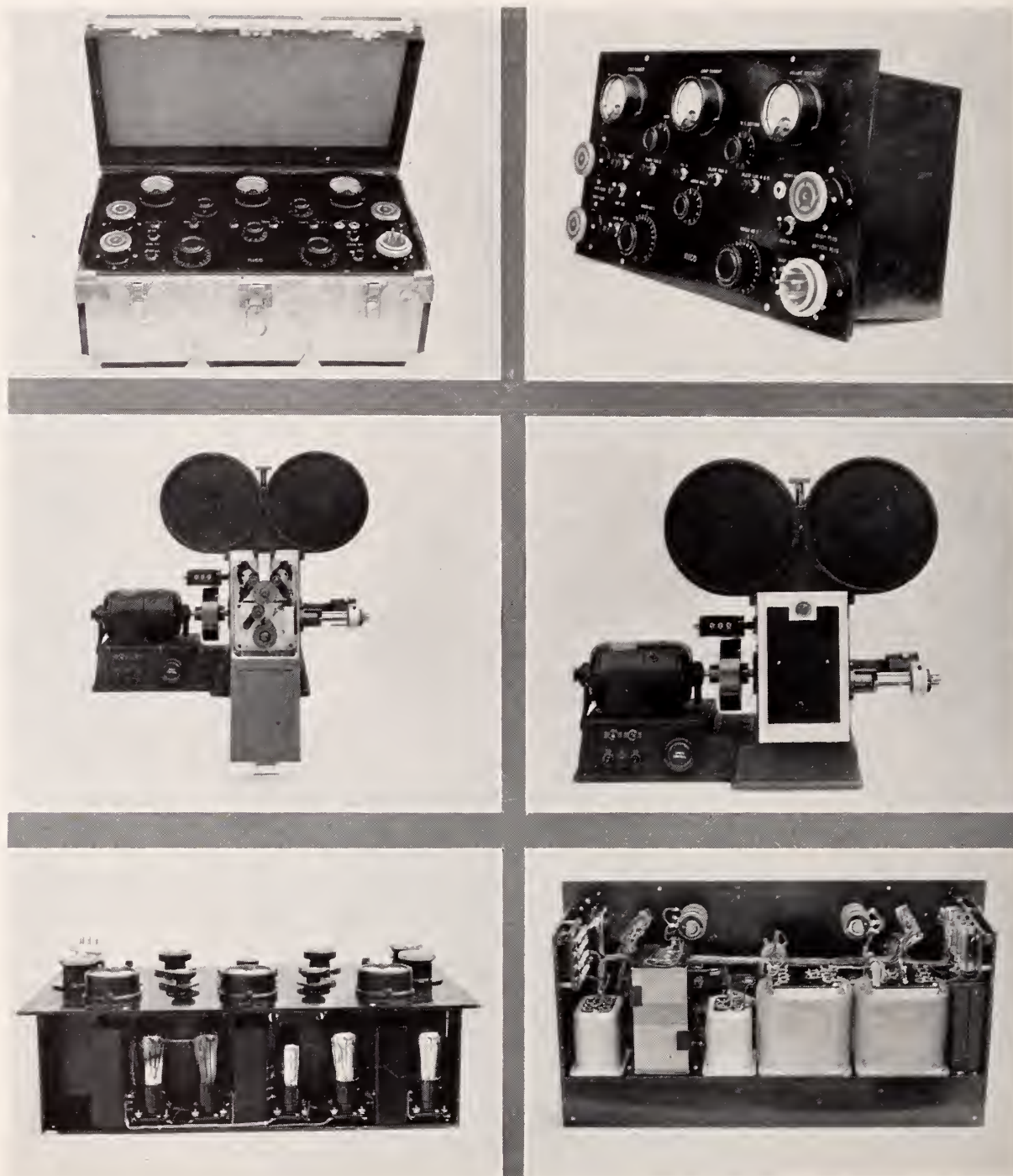
Entertainment: Frank Good.

Welfare and Relief: Arthur Miller.

Board of Editors, George Schneiderman, Hatto Tappenbeck, Dr. L. N. Dieterich, Dr. C. E. K. Mees, Dr. V. B. Sease, Dr. W. B. Rayton, Dr. Loyd A. Jones.



John Arnold



TOP, LEFT. "RICO" Recording Amplifier in Case. TOP, RIGHT. Amplifier out of case, showing protective dust cover. CENTER, LEFT. Exposed view of the new "RICO" Sound Camera with roller inertia flywheel film filter. CENTER, RIGHT. Sound Camera ready for operation. LOWER, LEFT. Tube assembly of "RICO" Recording Amplifier, showing individual protective catacombs. LOWER, RIGHT. Interior of Amplifier.

The New "Rico" Trunk Unit

by **WILFORD DEMING, JR.**

IN KEEPING with the modern trend in producing studios, of supplementing fixed and mobile sound recording equipment with light, trunk type, units, "RICO" is announcing their new type "B" Trunk Channel, which is illustrated by the accompanying photographs, and offered with slight equipment variations, as the "RICO JUNIOR." Obviously, for use in conjunction with, or paralleling, the operation of a large Studio Unit, the Trunk Channel must compare favorably, in every respect, with the high operating characteristics of the usual installation. The new "RICO JUNIOR" Unit sacrifices none of the high quality required for production recording, and yet is completely contained, with all accessories, excepting motor power supply, in four cases, with a weight of less than four hundred pounds.

The complete assembly shows, from left to right, the accessory box, containing three hundred feet of microphone and power cables, and one silencing blimp, and on the shelf above, two complete microphones, and compartments holding miscellaneous spare parts. One or two camera drive motors are carried, in a section within the coil of cables. The small box, in this instance, contains a driving motor for flexible shaft coupling to a De Brie Camera, and is not standard. In the center of the photograph may be seen the amplifier case, which during operation, rests upon the battery case, with a short junction cable connection. The Sound Camera, with two magazines, is carried in its own case, together with the necessary fittings and accessories, and a vibration insulated compartment for recording lights is included.

Recording Amplifier

The Recording Amplifier is designed to meet all normal operating conditions, and provides facilities for simultaneous operation of two microphones, the constant impedance mixer controls for which are placed conveniently at the forward edge of the panel. Tube plate currents, and filament voltage, may be read directly on the left hand meter, by means of the row of push buttons located in the center of the panel. The center meter reads the recording lamp current, which is controlled by the potentiometer immediately beneath. The right hand meter is a rectifier type volume indicator, calibrated for various recording levels. Two jacks are provided for monitor headphones, located beneath the volume indicator meter. At the extreme left side of the panel are located the two Cannon connectors for microphone cables, and at the right side, the male connector takes the battery cable, and the glow lamp cable is plugged into the special four prong connector, in the rear. Overall gain is controlled by the knob located between the first and second meters, while the volume indicator level is calibrated on the knob and dial to the left of the volume indicator meter.

An examination of the tube compartment beneath the panel shows two Type 240, and one 864 stages of amplification, feeding a special output stage, using 171A tubes. As a protection against tropical moisture, it will be noted that all interstage coupling condensers and resistors are impregnated in separate catacombs, located between the tubes, from which terminals are brought. As may be seen in the photograph of

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Rico trunk channel assembled for operation

Globe Trotting Cinematography

by RAY FERNSTROM

THERE are two distinct differences between the usual cine shooting and while globe trotting, Viz; First, you must be able to explain in many other ways and tongues that "This is not a surveying machine," and second, you have to use your ingenuity in a million ways, for the equipment you forgot or could not take along.

Definite, final and absolute sailing orders never, for one reason or many, come until the very last minute. Then it's grabbing the old box and rushing off. Nevertheless, we camera tramps get quite accustomed to gathering moss as we roll. Our entire planning and arrangements circle around camera and film. If need be, we can get along nicely with almost everything else, and like it.

Once, in Spitzbergen, while on the search for Amundsen back in 1925 I was at a loss for a filter. A piece of stained glass from perhaps the most northerly chapel in the world, served very nicely.

The minute you have left the boat that brought you to the foreign shore of your choice your real troubles, or experiences, adventures, or what ever you want to call them, start. A pencil, notebook, and elbow grease should accompany every traveling crank grinder into strange territory. You may think you know the language of these people, but brother, those dialects and local slang change as rapidly as a chameleon's skin. First resort to the well known sign language. If the addressee still looks blank, transparent or walks away, grab him and go into it with greater enthusiasm, more noise, but always with a big smile, no matter how much you perspire. This attracts a crowd. On an average of every fourth try this method usually attracts someone who will understand you. Here is where you catch the ball, and then some. Although he understands you perfectly, all his gyrations, emphasis and pep may be wasted, for his attempt at English, flavored with perhaps

Foreign Legion Gin, Potugees dialect or just plain stuttering will make you so mad the smile fades. But here is where will power makes for success. Get out the pad and pencil. Draw a motion picture of what you are trying to convey. This brings your crowd closer. Here is where a police whistle comes in handy. With the crowd closing in to view your work of art, blow the whistle. This absolutely brings someone who can speak your tongue, or the riot squad.

Last summer while on an expedition, we were in the far, near or middle East, to wit: Finland, on the Russian border. Get out your atlas. See that lake, that's LADOGA. Right out in the middle of it is an island, or rather a small group of them, called VALAMO. There's a real Russian monastery there. The last remaining sign of Russian Christianity. We had a Finn with us to interpret my Swedish into Russian. Here's how it worked out finally. Johnny Boyle would tell me in English whatever was on his mind. I'd repeat it in Swedish and our Finnish friend would tell the old Russian monk what was said. The old monk shook his head. "I guess the answer is no" John said. But the truth was, that the Russian our Finn spoke was not the Russian of the monks. So we won our point with Pantomime.

As we said earlier, ingenuity is Paramount. All of us like to work in a perfect darkroom, when it comes time for tests, and reloading. But such one seldom sees, and almost never enjoys, on a reel expedition. Change bags, quilts, closets, etc. become the rule of the road. Just for fun, let me here relate an experience in Denmark. My room had no real closets. A movable coat closet stood near a wall. I climbed up into it to check the light leaks. With a little taping, it would do. We were shooting dupack color, on this particular trip. Double magazines, double cans, double rolls to unload and reload. Just room enough to get in the closet, no light, and all that junk.

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The author in a perilous spot to get his picture



After a storm on a schooner

The Miniature Camera

By **CLARENCE SLIFER**

THE OLD adage, 'There is nothing new under the Sun,' certainly holds true in reference to the miniature camera. Our 'latest' development in the photographic field, the miniature camera, was used about sixty-five years ago, when a British astronomer, Mr. C. Piazzi Smyth, visited the Egyptian Pyramids. Perhaps this trip holds the distinction of being the first camera-location trip.

At the time of Mr. Smyth's travels, it was impossible to obtain Kodak film at the nearest drug store or to carry an adequate supply with you, for in those days it was necessary for the photographer to make his own photographic plates and these had to be exposed while they were still wet. To offset photographic failures often encountered while working out-of-doors in Egypt, with its high temperature and clouds of dust, Mr. Smyth designed a miniature camera.

Compared with modern miniature camera, the construction details of Mr. Piazzi Smyth's camera are very interesting. The camera was of rigid construction and used no bellows. The back of the camera was formed by a removable ebonite tank, with a glass front. This tank held the sensitising solution. The collodionized glass plate was immersed in this solution and after a given length of time, the exposure was made while the plate was still immersed.

Using a lens of $1\frac{3}{4}$ inches focal length, a negative 1×1 inches was made. Smyth, with these little negatives, was able to make enlargements that were comparable with contact prints of like size. Naturally, you perhaps wonder why the photographic profession did not hasten to adopt Mr. Smyth's camera as a worthy addition to their equipment.

I imagine the arguments both for and against the little camera were much the same as we hear today. Unlike today Mr. Smyth had but a few points on his side when it came to comparing cameras, materials, and working methods. It was true that his negatives were small, but it was just as easy to make a large wet-plate as a small one. He could make enlargements of 8×10 size and larger, but with his crude enlarging apparatus and slow paper it took infinitely longer to make enlargements than contact prints. He couldn't brag about the wonderful depth-of-focus that his pictures possessed because the man using an 8×10 camera also had good depth-of-focus in his pictures as he rarely made an exposure without stopping his lens down to a pin-hole in size. Even in those days of generous size pockets could you have stretched the truth a bit to call Mr. Smyth's brain child a vest-pocket camera. A tripod was also an indispensable piece of equipment.

If only Mr. Smyth could have exhibited some of the modern miniature cameras, to his colleagues, like the Leica, the Rollei-flex, the Kolibri, the Pilot, the Mankinette, and many others. With pride he could have pointed out the versatility of the Leica with its many lenses of various focal lengths and large apertures. Its capabilities as a stereo, panoramic, aerial, microscopic, three color, copying, speed, and candid camera, while still retaining its essential feature, compactness. Could he have clinched his argument for the miniature camera by exhibiting a modern enlarging machine and telling of the good things to come in the future, as fast panchromatic film and splendid paper for enlarging upon, I can imagine that he would have had many supporters for his cause. Unfortunately Piazzi Smyth was 60 years ahead of the photographic field.

Until recently the miniature camera has had a tough struggle for recognition. A few short years ago the leading camera in the miniature field was the so-called vest-pocket camera. This camera made a picture $1\frac{5}{8}$ by $2\frac{1}{2}$ inches in size. A few models had lenses with an aperture as large as $f4.5$. I had one of the cameras made by Carl Zeiss. It was well made and was small enough to carry in a purse case similar to one I use for my Leica. Vest pocket cameras in those days lacked originality of design. They were merely condensed duplicates of standard cameras. They still required the same number of operations preliminary to making a picture and they still used the old familiar bellows with its many faults amplified by trying to crowd it into as small a space as possible. A few attempts were made from time to time to use motion picture film in a miniature camera. That idea was also ahead of the times due to the fact that motion picture film in those days was 'nothing to write home about.'

Miniature cameras started to change in design. They were made sturdier and lenses on extreme aperture were fitted to them. Ernemann started the ball rolling with their miniature focal plane camera and later with the Ernemann Ermanox fitted with Erno-star lens of then unheard of aperture, $f2.0$. Due to the enormous aperture of the lens, the Ermanox looked like a portrait lens with a bit of a camera attached. As there was a strap attached to the lens barrel, you could wear the camera around your neck like a pair of binoculars. The miniature camera was certainly developing into a sporting proposition.

I am sorry to say that my experiences with the excellent Ermanox were not so hot. Most of the time I was unable to obtain films or plates of the proper size and those that I did obtain were much slower than what I was using for my Graflex. It was possible to obtain almost an equal exposure with the

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Study of expressions—planning a dolly shot—made with a Leica



Director Seiter and Cameraman Art Miller unconscious of being snapped with a Leica

HAL HALL

says

Stray Thoughts

OUR hat is off to Jack Alicoate, editor and publisher of Film Daily, for his remarks regarding "Scarface" . . . Jack, in brief, declared that the picture is too blood-thirsty and morbid to be shown to the youth of America . . . and he writes this in the paper which depends upon the industry for the advertising that pays its bills . . . more power to him for his courage . . . There have been too many crime and gangster pictures already . . . why make more and even under the pretext of trying to show the futility of crime, place new thoughts regarding crime in the minds of our children . . . When production officials declare they want to teach a moral lesson it is a lot of boloney . . . if you don't believe us, just listen to the howls go up in the studios when any picture fails to make the grade at the box office . . . We have yet to find any picture company willing to lose money to help dear old John Public, either morally or any other way . . . It is the clink of the dollars at the box office that is behind all pictures . . . This is only natural when you consider the big investment therein . . . But why not be honest about it? . . . An echo of the spirit of the late George Eastman is found in the announcement by the Society of Motion Picture Engineers of the awarding to Dr. Peter A. Snell of a fellowship at the University of Rochester for research work that will be useful to the motion picture field . . . This was made possible by a donation of \$1500.00 by Mr. Eastman who constantly was striving for the betterment of the technical side of the industry . . . Would that there were more men like him . . . saying little and doing much of a constructive nature . . . Too many publicity departments and not enough really constructive thinking and accomplishment seems to be one of the curses of the picture industry . . . and many other industries . . .

Uncle Carl

THE FINANCIAL report for Universal Pictures for the quarter ending January 30, 1932, has just been made public, and once again we take off our hat to Carl Laemmle, grand old man of filmland.

The report shows a net profit of \$181,557.11 for the three month period. Not a great profit, we admit. But, nevertheless, a profit, which is more than some of the organizations with scores of executives and financial experts have shown for some time. In fact, it is quite refreshing after reading reports of some of the biggest companies that showed losses running into the millions. All of which goes to prove that Uncle Carl apparently knows what the public wants, knows who to put in the production offices, and knows how to curb expenses. A really remarkable man is Uncle Carl.

Congratulations, Mr. Selznick

SINCE David O. Selznick took over the production reins at RKO-Radio Studios in Hollywood good pictures have been the rule. And, from present indications, they will be coming regularly from that studio. Perhaps one of the reasons is the fact that Mr. Selznick has the courage to point the way for the other studios in the matter of using common sense in his picture work. His latest wise move is the abolition of Supervisors at that studio. Everyone in the game knows that directors and writers have long been hampered by the supervisor system. We congratulate Mr. Selznick for stepping ahead and eliminating them at his studio.

The Amateur Contest

TIME is flying rapidly by, and we take this opportunity to call to the attention of our many amateur readers the fact that only six more months remain in which to make and enter a picture in the \$1000.00 Amateur Contest which this magazine is conducting. Already many really wonderful pictures have arrived, and more are coming right along. The list of prizes has increased until now the value is well over \$2000.00, of which \$1000.00 is in four cash prizes. As no professional cinematographers are permitted to enter a picture every amateur has a fine chance of winning something in this contest. In case the users of 9½ mm. cameras think that only 16 mm. films are eligible we take this opportunity to make it clear that films may be made with EITHER 16 or 9½ millimeter cameras. However, they cannot be made on 35 millimeter equipment and then reduced. Many more equipment prizes will be announced before the contest ends, and we hope to have special prizes covering every type of picture that may be submitted, exclusive of the four big cash prizes. Any ambitious amateur who wants to win recognition of his work would do well to get into this contest. Now that the summer months are just ahead, the amateur has splendid opportunities for shooting.

Greta Garbo

IS GRETA Garbo dead? That question has been asked this writer at least fifty times during the past couple of weeks, since the report has spread from some source that the great Swedish star has died and her place has been filled by another actress posing under the guise of the great Garbo. Frankly, we do not know. The entire story seems like a lot of wild rumor to us. Perhaps a marvelous publicity stunt on the part of those fine publicity men out at the Metro-Goldwyn-Mayer studios.

These Trying Times

IT is difficult to keep pleasant thoughts in one's mind when you are stopped at least twice each block by men of various ages asking for the price of a meal. Not professional beggars; but men whose faces show the pinch of hunger, privation and suffering. Where will it all end? Where are we drifting?

With a Congress acting like a group of mad men in an effort to find new ways and means of squeezing more taxes from an already overburdened peoples, one wonders sometimes, what the solution will be. That it will not come from Congress seems a certainty. So, it looks as though it is up to us individuals to work it out in our own way. And there is the answer—work. Those of us who have jobs and businesses should put forth the greatest efforts of our lives right now. Depression or no depression, if we work hard enough and long enough we are bound to meet with at least a fair measure of success. And when we are successful it means that we can give someone else a job and a helping hand, which will eventually pull us out of the mire. This is not a time for sitting back and waiting for business to come to us, or for someone else to solve the problem. It is a time when individual effort is needed to start the wheels going in the proper direction again. We have been through depressions before. We have always come through them and our country has risen to new heights of prosperity. It will happen again, but we must stop crying about the hard times; we must lift our heads, stick out our chins and work as we have never worked before—not forgetting at all times to give a hand to the fellow who does not have the chance to work.

Concerning Cinematography

Critical Comments on Current Pictures
by **WILLIAM STULL, A. S. C.**

THE past thirty days have not been particularly productive of great cinematography. Capably-photographed pictures there have been in abundance, but none to rank beside "Shanghai Express," "Arrowsmith," "The Broken Lullaby," or "Mata Hari." No one film, in fact, could honestly be rated as the best of the month.



THE DOOMED BATTALION

◆ The most striking example of cinematography is "The Doomed Battalion," which was photographed by Charles Stumar, A. S. C., and two German artists, who, unfortunately, did not receive program credit. Their work was, however, excellent. The picture was made partly in Germany, and partly in this country; the German portion was originally commented upon in this department under its original title of "Mountains In Flame." Mr. Stumar had an unusually difficult task in matching the original German photography, which evidenced the same superbly unique qualities that made "The White Hell of Pitz Palu" so unforgettable. He has succeeded excellently, although handicapped by the fact that the picture was begun by Dr. Arnold Fanck, (of "Pitz Palu" fame), and finished by an American director who, though capable, did not have Dr. Fanck's artistic viewpoint. In the earlier sequences of the film, the picture was marred by a too-great tendency to softness; but as the film progressed, more and more of the original Teutonic virility became evident in Stumar's photography, which was intercut with the German-made portion, and did not suffer by comparison. The picture was full of difficult angle-shots, which Stumar has handled in a manner that should bring him praise from all of his fellows. His has been a difficult and a notable achievement.

CLARA DEANE

◆ Henry Sharp, A. S. C., has a habit of turning out pictures in which the photography maintains such a note of realism that one forgets that it is photography. "The Strange Case of Clara Deane" is such a picture. He has achieved a very nice quality all the way through, without ever being spectacular—which would have, in such a story, been fatal. Toward the end of the film he has a number of very effective effect lightings, which, however, fit in perfectly with the mood and action of the story. The sole criticism that can be levelled at the picture is that in the later sequences, Wynne Gibson's makeup is rather too obvious.

"MICHAEL AND MARY"

◆ This is far and away the best cinematography that England has ever sent us, and it adds the name of Leslie Rowson to the list of the great masters of the camera. His camerawork matches the story perfectly in its combination of delicacy and quaintness. Since the story covers a wide range of time, and a variety of locales, ranging from Boer War days to the present, and from cheap London rooming-houses to a luxurious West End residence and a formal police-court, Rowson has had an unusual variety of material to work with. No cinematographer could have utilized them to better advantage, and none, certainly could have done so with a mood and quality so perfectly matching A. A. Milne's elusive quaintness.

THE TRIAL OF VIVIENNE WARE

◆ This picture is an excellent example of the crimes that are committed in the name of originality. The outstanding atrocity is the way in which changes of scene, lapses of time, and, in fact, everything for which a cut, a fade or a lap-dissolve is normally used, are bridged by wild swings of the camera. On three or four occasions, this device is very useful; a legitimate and novel cinematic device; but when used as it is all through the picture, it is definitely bad. I am surprised that so capable and intelligent a director as Wm. K. Howard could be guilty of so flagrant an abuse of any technical trick. Admittedly, it keeps the picture moving at an unusually rapid tempo; but Howard's direction has sufficient of this in itself so that it does not require the aid of any such trickery. And as it is, the swings add confusion to an already choppy story.

The sets, too, could be improved upon, especially the ultra-modernistic courtroom and court-house, which rob the picture of a needed note of reality.

Despite these handicaps, Ernest Palmer, A. S. C., has done a very commendable job of photography. His lightings, compositions, and general feeling could not be improved upon, though his lighting of Joan Bennett is not as sympathetic as it might be.

THE LOST SQUADRON

◆ This is one of those pictures that might have been. It boasts a good story, a fine cast, and excellent direction—but it is weak as regards the technical details. The photography is adequate; in some sequences rather better than that; but in the main Leo Tover and Eddie Cronjager have fallen into the pitfall of exaggerated backlighting. In a picture that stresses the note of harsh realism, it is utterly out of place to see every character—no matter where the action may be—followed by a halo of backlight. These two gentlemen should take a few hours vacation and see "The Broken Lullaby"—so, in fact, should every American cameraman—and learn just how much realism is added to a picture by the suppression of backlighting.

Lloyd Knechtel's process work is excellent, and Elmer Dyer, A. S. C., has, as usual, contributed some superb air scenes. The flying public will, however, be disappointed in the flying and synthetic crashes after having been accustomed to the excellent ones staged for so many films by Dick Grace.

YOUNG AMERICA

◆ This picture, though unpretentious, is a beautifully photographed production. It is exceedingly welcome to see George Schneiderman, A.S.C., given a chance to photograph such a picture, for it is quite the best work he has done in some time. Much of the credit, of course, must go to Frank Borzage, who is one of the few directors who really understands the cameraman's work, and who invariably sees to it that the cinematographer has ample opportunity to deliver the best that is in him. And Schneiderman has come through with a fine piece of work, despite the handicap of small and unpretentious sets. I have never seen Spencer Tracy photographed so sympathetically.

THE WOMAN IN ROOM THIRTEEN

◆ This picture is distinguished by more of John Seitz's, A.S.C., fine photography. There are few men, indeed, who can so perfectly feel the mood of picture and scene as Seitz. The process work in this film, by the way, is exceptionally fine.



Three unusual pictorial studies from the camera of Sophie L. Lauffer, F.R.P.S., are shown on this and the opposite page. Above: "Fig Vendor—Tangiers." Top opposite page: "Vesuvius." Bottom "Fiesta Dance."



Globe Trotting Cinematography

(Continued from page 16)

Hotter than the Sahara, and almost cocktail time. Rush boy, rush. I slammed the door. All went well, a handkerchief kept the sweat from dropping on the film. The job was done. Now for fresh air, and does air ever taste better than after twenty minutes in a clothes closet, in the summer.

No go . . . Push, pull, hammer and cuss, but the door stayed shut. The room door was closed and my room was the farthest down the corridor. The closet stood on a soft, thick quiet rug. I rocked the darn thing, but no sound. Those Scandinavian cabinet makers certainly make things to last, for I couldn't break the door. I tried to visualize the room. On the other side of the door was a long heavy plate glass mirror. To fall that way would be both costly and ruinous, for there stood the camera, newly cleaned on the tripod. On the other side was a wall. How far, I could not figure, but I had to get out. I rocked slowly, trying to keep from falling toward the camera. Over she goes . . . No. There it stayed. I couldn't budge it. It had neatly tipped and caught just under a panel. But I had made contact with the wall. I pounded



The author arriving in New York from a dash to Greenly Island with pictures of German Atlantic fliers

hard against the upper corner. Somewhere in the distance a voice came. After what seemed a century the door swung open. I felt as if in an explosion, so great was the relief from bad air. Did that first cocktail taste good! Let that be a lesson to you guys.

One of the best reasons for hemisphere hopping, is friendships. They may be of short duration, but they are certainly material for memories that sink in. A fellow gets as much out of a journey as he puts into it. A sense of humor, a little boldness, a few neat manners and a glib tongue, and a boatful of people, of all kinds.

Many are the trials and tribulations of the man on the road, but many are the pleasures. What would we do without our adhesive tape? It repairs broken tripod legs, plugs holes in leaky boats, darkens darkrooms and generally is our best friend. It sometimes happens though that a tripod is broken beyond such repair. I have used the tail end of ox carts and even soap boxes when in a rush.

Have you ever forgotten the crank? Or lost it, while working on some precarious position? But worst of all, have you ever found yourself far from supplies and running low on negative just as the best part of your picture materialized?

In 1928 when all we newsreel men were rushing north in an effort to first reach the German flyers, Haunfeld, Koehl and



The author and John Boyle, A.S.C. with an improvised camera car in Sweden

Fitzmaurice, and their successful plane the Bremen, up in Labrador, I suffered such a pain. In news one seldom carries a heavy supply of film. In those blessed silent days we most often covered a news story in 2 to 400 feet of negative. On that occasion I had 1000 feet when we started. After luckily reaching the subject first I ground like mad. On the flight there a particularly interesting air sequence used up a 200 foot roll. It was mostly clouds with the dangerous terrain below piercing through here and there. After reaching the stranded plane I wished for an extra roll for some extraordinarily good news material, much more valuable than the air stuff. There was but one thing to do. I reloaded the exposed air stuff and double exposed the news shots heavily over it. When later we view it in New York the effect was not only satisfactory but, the boss complimented me on the scenes.

Sound brought its own problems and occasionally trouble would occur far from home. Good old Norman, my sound man on an expedition to points south of New York, came in for his share. On a flight over Havana the sound went haywire. He left his equipment and joined me by the camera. As the footage indicator moved, wise old Norm checked the points of interest below alongside the footage in his note book. Later, on the ground, with the sound repaired, we rewound the nega-



A bright spot in globe trotting, John Boyle shoots beauties in Sweden

tive and recorded a background of airplane sound, from the plane tuning up, on the blocks, while I read off the points of interest (presumably below us) from his notations in his book, as the indicator located positions on the negative.

When the old Graf Zeppelin took off from Lakehurst on her round the world flight, something was wrong with our sound

(Continued on page 45)

WHAT DOES YOUR PUBLIC KNOW ABOUT RAW FILM?

NOTHING, perhaps. Yet, whether they're aware of it or not, people are profoundly influenced by the *photographic quality* which that film gives or does not give them on the screen. It may mean all the difference between a picture that goes its quiet, unprofitable way and one that becomes the talk of the town.

There's no need, these days, to run the risk of sacrificing photographic quality. Eastman Gray-backed Super-sensitive Negative, with its unmatched qualities and its never-failing uniformity, costs no more than other films, yet it helps substantially to head the picture for success. Wise the cameraman who uses it...lucky the exhibitor who runs prints made from it!

EASTMAN KODAK COMPANY

J. E. Brulatour, Inc., Distributors
New York Chicago Hollywood

..In the Realm of Sound..

New Sound Service

CONTINENTAL Pictures Corp. announces the opening of their new Hollywood offices and recording studio at 1611 Cosmo St.

A beautiful and spacious sound studio is available for re-recording and scoring with sound effects, music and descriptive talks, and "Rico" recording equipment will provide sound service at the lowest commercial rates available in Hollywood.

This organization also maintains an extensive film library containing many valuable and unique foreign films, and provides a source of raw stock supply at reasonable prices.



Monster Screen Installed in New York Paramount

THE largest Chromolite sound screen ever made was installed in the New York Paramount. The picture surface of the screen measures 31 x 43, a total of 1,333 square feet.

A full length picture of a man filling the screen from top to bottom will show him as about 30 feet tall, each of his shoes will measure about five feet in length, his middle finger will be about 19 inches long, his eye will be larger than an average face, and the mouth from corner to corner will be nine inches wide.

In spite of the immunity of these figures the optical illusion is such that the audience will not be aware of the tremendous size of the figures. They will seem perfectly natural to the patrons viewing the picture.

Publix is gradually replacing perforated screens with Chromolites and Super Vocalites, the Chromolite in the New York Paramount being the largest up to date.



Photo Cell and Kit Put Out by LuxTron

A NEW photo cell known as the LuxTron "ST" type, together with a new "R-1" relay and a complete photo cell kit, has been brought out by the LuxTron Devices Co. of Brooklyn. The LuxTron cell, which operates at 22.5 volts, is said to be a very simple yet powerful cell, rugged enough not only for experimental, but for practical applications, and may be classed as a "photo conduction" or "photo resistance" device. Its functional characteristics are such as to vary its electrical resistance, or conductivity, on exposing it to a source of light.

Because of the large current change resulting from light exposure, obtained by the use of the LuxTron cell, it is possible to operate a relay directly without the necessity of employing amplification.

Included in the LuxTron kit, which is said to be complete in every way, containing all the essential components needed to start in the light-operated control field, are a light-sensitive LuxTron cell, a relay for controlling a 110-volt circuit, a gumwood relay cabinet and a complete set of instructions and diagrams.



New Sound-on-Film Device

Paris—Rene Nublat has filed patents here and in all countries for a new system of sound-on-film recording using entirely new apparatus. Reproduction is said to be excellent and the cost very little.

Westinghouse Develops Improved Circuit Breaker

A NEW safe, flashless device known as the AB "De-ion" circuit breaker developed to perform the function heretofore left to carbon circuit breakers or fuses, for use as a circuit protection in buildings, homes, theatres, studios or wherever electricity is used, has been brought out by the Westinghouse Electric & Mfg. Co.

A number of advantages over the fuses and carbon circuit breakers are claimed for these "De-ion" breakers. Unlike a fuse, the "De-ion" breaker has nothing to be replaced or renewed. It can be reclosed by anyone as quickly and easily as a switch. It cannot be held closed against an abnormal overload or short circuit, nor can it be blocked to prevent opening the circuit, and its rating cannot be changed by unauthorized persons. It also has a time lag preventing unnecessary tripping on slight, momentary overloads.

The device requires only about 70 per cent as much mounting space as a carbon breaker, and unlike the latter it opens a short circuit without flash or undue noise.

Enclosed in a molded composition box with no live parts exposed, the device consists of a handle, like that of a switch, that protrudes through the cover to provide means for manual operation and for reclosing the breaker after it has been tripped, but the remainder of the mechanism is entirely enclosed, the company claims.



New Solderless Lug Has Many Advantages

THE new solderless adjustable lug recently brought out by Hoffman-Soons Electrical & Engineering Corp. of New York is reported meeting with great popularity by users, owing to its adaptability to several different wire sizes and as a time saver in making connections of the lead wires to rheostats for motion picture projectors.

The lugs, which are being offered in three styles, 1A, round terminal, 2A, round terminals, and 3A, for square terminal, are of extra heavy construction, adjustable, and will accommodate any size wire from 4 B & S to a number 4-0 B & S with equal efficiency. An added feature is the support which prevents the lugs from becoming loose.



Microphone, Turntable Adaptable to Many Uses

A COMPLETE microphone and an electric phonograph turntable, adaptable to many uses in theatres, auditoriums, studios, etc., and said to be especially useful in making announcements of coming attractions and playing song numbers in theatres, is being marketed by the Mellaphone Corp. of Rochester.

The device, which is small and compact, can be readily connected to any sound system regardless of make, the company declares.

**No Sound Engineer Should
Be Without Volume 2
Cinematographic Annual**



"Always One Step Ahead"

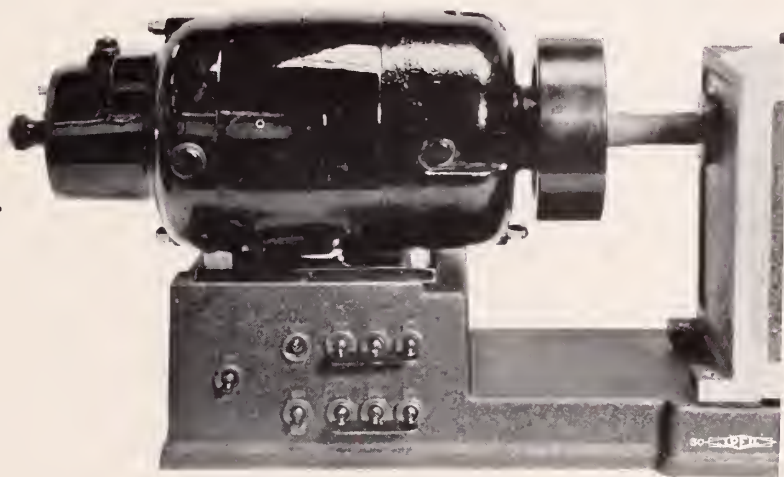
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Principles of Sensitometry and Their Practical Application

Part 13

FROM the time of Hurter and Drifffield's proposed standard pyro developer down to the present time the standard developer for sensitometric purposes has been of the pyro-soda type. As a matter of fact until about four years ago a majority of all development in still and motion picture fields was carried out with some type of pyro developer. There is, however, one quite serious objection to the use of a pyro developer, and that is its staining effect. This effect was much more noticeable in developers in which the concentration of sodium sulphite was relatively low. This is caused by the fact that some of the reaction products, which the silver halide is converted into metallic silver by a pyro-soda developer, are strongly colored and are absorbed to a certain extent by the gelatin immediately surrounding the developed grains. As a result the developed image has a yellowish color and the amount of this color is practically proportional to the mass of silver produced. This yellowish stain which strongly absorbs the shorter wave lengths of light has relatively little effect upon the density of the deposit as measured visually. Since, however, most materials upon which prints are made, for example photographic papers and motion picture positive film, are sensitive chiefly to the blue and violet, the pyro stain has a very pronounced absorption to which these materials are sensitive and therefore the effective printing density values are not in agreement with those measured visually. As a result a negative developed in a staining pyro developer has appreciably greater printing contrast than is indicated by visual judgment or by visual density measurements. If it is desired to apply sensitometric measurements obtained with a pyro developer to practical printing problems, it is necessary to make a correction for this effect. This will be discussed in detail further on in these articles.

During very recent years the pyro type of developer has been used less and less in practical work and not at all in motion picture processing. It has been used to a slight extent in the development of amateur negatives. As a result of this trend a pyro developer ceases to meet the needs for standardized sensitometry. While considerable work has been done and many discussions held relative to a standard developer for sensitometry, it is not the purpose of this paper to deal too much with the theory of this subject so that we shall not enter into a discussion of standardized developers. It is sufficient to state that for the motion picture industry, at least, the developers in use at each laboratory constitute the standards for that laboratory and it is with such developers that their individual sensitometry must be studied and practised. In general it may be considered that the best developer to use for any particular photographic material is that formula recommended by the manufacturer of the material in question. Furthermore, for processing control it should be remembered that it is not always sufficient to use a developer made up according to the formula adopted for practical work without taking steps to insure that this developer is effectively the same in its action upon the photographic material as that actually used. Practically all developing solutions begin to change their effective composition as soon as exposed materials are developed therein. A tank of developer in which a relatively large amount of photographic material has been developed

suffers sufficient change so that its action is appreciably different than when the developer is freshly compounded. The best way, therefore, to insure that the sensitometric results shall be a precise index of the action of the developer on the exposure material is to actually develop the sensitometric strip along with the material being processed, attaching the sensitometric strip in some way so as to insure that it is developed under the identical conditions to which the material to be controlled is being subjected.

Before becoming involved with too many details of the development processing it would be well to consider first some of the purely chemical aspects of developers and development. The light sensitive photographic emulsion consists primarily of a suspension of the silver salt in a solution of gelatin. Upon the exposure of the sensitive emulsion to light no visible action takes place, except upon intense exposure when a darkening of the emulsion can be observed to development. For normal exposures it is of course necessary to chemically reduce the silver salt into metallic silver. This chemical reduction is accompanied by the use of certain chemicals in combination and variations of the necessary chemicals provide an abundance of developer formulas. Every formula must contain the reducing agent, an alkali, a preservative, and usually a restraining agent. The reducing agent is usually an organic chemical such as pyrogallol, elon, hydro-quinone, etc. The alkali is usually sodium carbonate or borax. The preservative is sodium sulphite, while the restraining agent is potassium bromide or potassium iodide, or both. Their major action is to retard the growth of chemical fog. With these agents in proper combination almost any desired photographic result can be obtained on either positive or negative materials. In our next article we shall deal solely with the chemicals themselves and their action upon the emulsion during the course of development.

Suggest Lower Fee

H. T. COWLING, chairman of the membership committee of the Society of Motion Picture Engineers, announces that the Board of Governors have recommended a reduction in the entrance fees to \$10 for Active members and \$5 for Associate members.

"All applications received by the membership committee," said Mr. Cowling, "will be held subject to the reduced fee rate."

Officers of the society expect the reduced fee to open a wider field and to establish a more intimate contact with the motion picture industry as a whole.

French Government May Produce Films

THE French film industry may be faced with governmental competition in the near future. The Government has named a commission of five men to create a "Centre de Production Francaise Cinematographique." Delegates on the Commission are Messrs. Malvy, former minister; Paternotre-Denoyers, A. Lefas, J. L. Libreton and J. Locquin. It is understood that the government plans a vast production organization which would make its own films with state funds and state backing, with power to call upon the actors and singers of the Comedie Francaise and upon the Ministry of Fine Arts.

New Rico Trunk Unit

(Continued from page 15)

the under side, the assembly is compact, with all leads as short as possible, carefully cabled and impregnated, and shielded, where necessary. At the right hand side may be seen the fuse block, in which are mounted the fuses protecting all voltages.

Careful design of this amplifier has resulted in a flat characteristic from fifty to above eight thousand cycles, with an overall gain of one hundred and ten DB, and an undistorted output of plus eighteen DB, allowing the widest range of operation, under all conditions. "RICO" has a working agreement for the use of Loftin-White amplifier patents, issued and pending, and other patents, including noise reduction.

The noise reduction feature of the "RICO" Studio Model has not been included in the new Trunk Channel Junior Unit, for the reason that experience has shown that the added complications of noise reduction processing, in the average foreign studio, has proved too difficult to obtain results justifying this addition, at the present time. It has been proven that, with careful processing, a film can be obtained with a degree of quietness comparable to average so-called noise reduction, with this unit.

Sound Camera

The recording camera has been especially designed, after careful study, taking advantage of experience covering many different types of recording heads. A spring type mechanical filter provides the maximum sprocket drive motion efficiency, and this large sprocket, engaging eighteen teeth in the film at all times, ensures perfect film motion past the recording slit. This large sprocket has been found far more efficient than a small sprocket, which engages approximately only four teeth in the film. Positive guide rollers hold the film on the sprocket, and are easily released for threading by a touch on trigger action trip arms. The film drives a perfectly balanced, inertia roller type, fly wheel, which imparts an additional smoothness to its motion.

Throughout this entire head, machine tolerances on all drives and the sprocket do not exceed two tenths of one one-thousandth of an inch, and bearing surfaces are ample for continued use over a long period, without wear. All drives consist of non-reversible worm gears, using steel against a special fiber composition. The oiling problem has been eliminated, and from one source all bearings receive the proper lubrication.

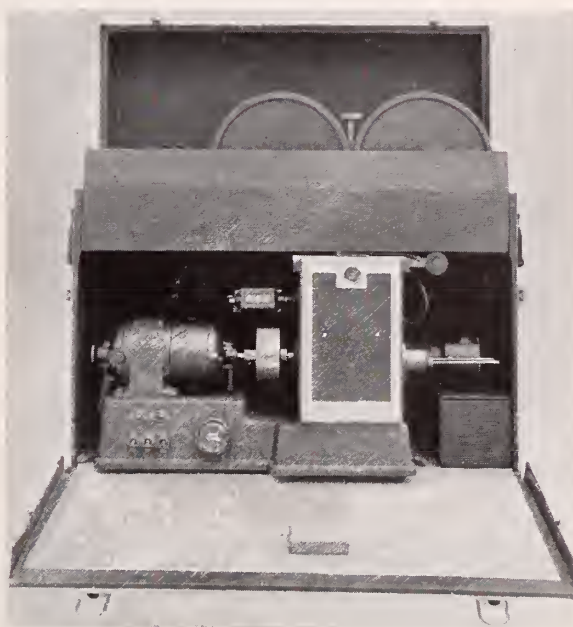
A train of gears drives the footage counter, while the tachometer is operated directly from the drive shaft, and provision made for belt takeup for either four hundred or one thousand foot magazines. A Westinghouse DC interlock type is used, to drive the sound camera in synchronism with one or more similar motors driving the picture cameras. Conventional starting and interlocking switches, and speed control resistances are provided, and mounted on the base.

Optical Slit

The "RICO" slit is the result of many years' development of glow lamp recording, and is not simply a glass wedge collecting device, but consists of an optical method of condensing and focusing the maximum light from the glow lamp onto the film with a negative track width of one hundred and sixty mils, and a beam thickness of less than one mil. This beam is obtained through the perfect grinding upon the correct optical axis of a pure crystal quartz, in which the back surface is ground in the form of a condensing lens, focusing the light upon an optical slit and cylindrical lens, which in turn conforms the beam to the required thickness of less than one mil, at the point of contact with the film. This optical unit is mounted in a contact shoe, over which the film passes at the proper point of the light beam, and with the slit in position, azimuth tests and frequency characteristics are checked, before release for operation.

Motor System

The motor system uses the standard DC interlock type motors, consisting of four pole, one twentieth horse power DC motors. At points one hundred and twenty degrees apart on the armature, leads are brought to three slip-rings. As these motors approach speed, the three phase alternating current generated across these slip-rings is paralleled with other units in the system, the three phase AC holding all in synchronism. One hundred and ten volts of direct current is required to drive the motor system, each unit drawing seven tenths of an ampere. For operation over short periods, standard heavy duty "B" batteries will provide sufficient power to operate the motor system, but where a prolonged operation is necessary, a twelve ampere-hour storage battery, or a light generator unit, is provided.



Sound camera in its carrying case showing compartment for magazines and spare parts

Hand speed control, and a magnetic tachometer, have been found satisfactory for portable use, and under these conditions music recording of the highest quality has been obtained. To control the speed of the motor system in the "RICO" Studio Unit, a tuned speed control is provided which holds the system to a speed accuracy exceeding one one-hundredth of one percent, and though not provided with the Trunk Channel unit, this speed control is readily adaptable.

It has been the policy of "RICO" to include a complete list of spare parts with all units, and this list for the Trunk Channel includes a spare recording light, condenser microphone head, tubes, all meters, resistances, condensers and transformers, providing a maximum degree of safety for all eventualities.

This new unit has been designed with the view of complete operation by one man, and with the sound camera placed on its case beside the amplifier and battery cases, all controls are within immediate reach for both the recording amplifier and the motor system.

All equipment is mounted in weatherproof metal clad ply wood cases, designed to withstand all the requirements of baggage transportation.

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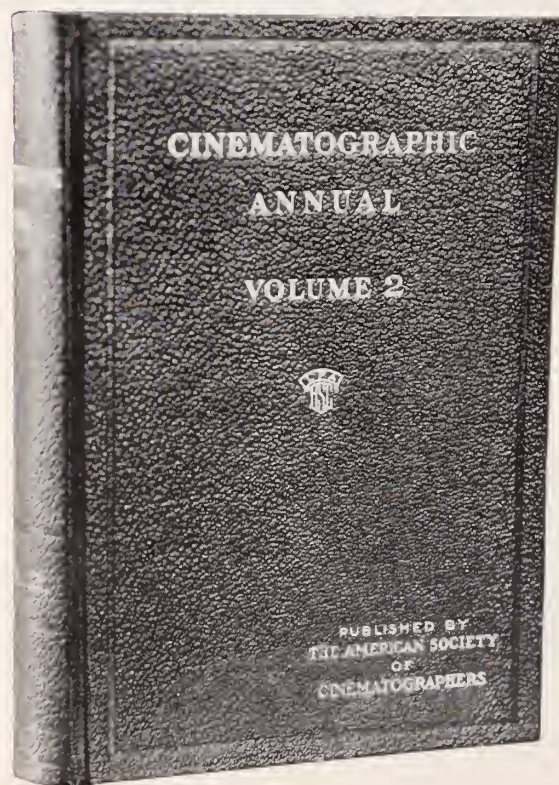
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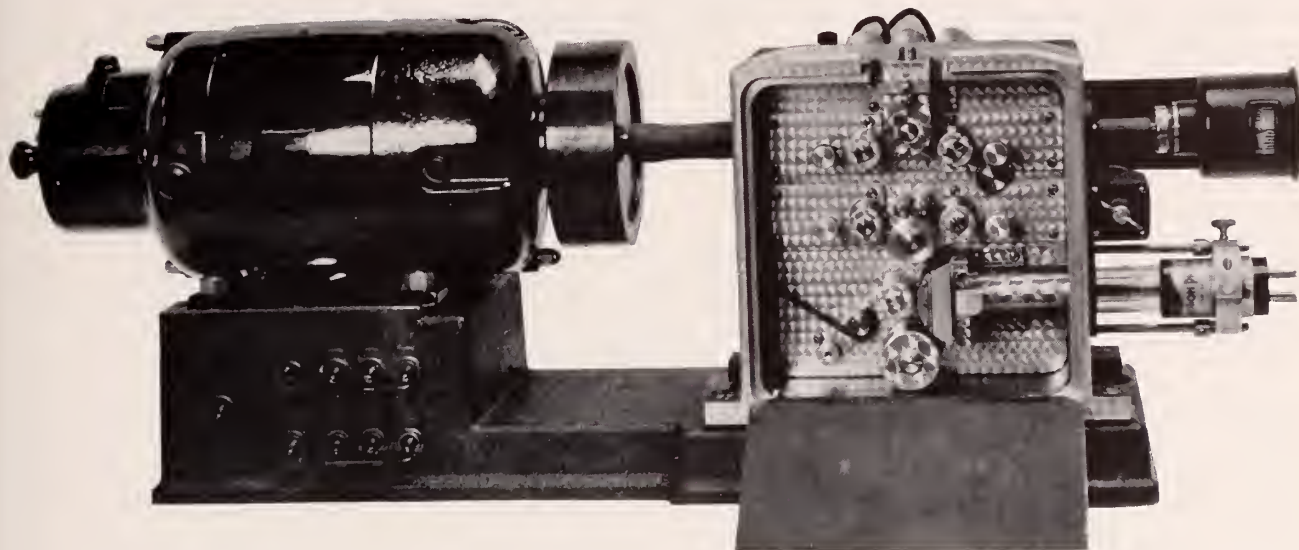
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Veuillez faire mention de l'American Cinematographer en écrivant aux annonceurs.

Automatic Speed Control Motor



ONE of the most important announcements of sound motor improvement since the inception of the Direct Current, Interlocking Motor comes this month from Art Reeves. Mr. Reeves, who is known as one of the most progressive technicians in the motion picture industry, is pioneering in this feature of sound recording much the same as he did in October 1930, when he announced and released to the trade, what is now known as the Direct Current Interlocking Motor.

The new Direct Current Interlocking Recorder Motor as here announced, has built into it an entirely new and practical feature, i. e., the Automatic Speed Control which will greatly increase the efficiency of the sound recording apparatus. This feature has been available for many months but with characteristic thoroughness, and a desire to present the speed control to the trade as a perfected and highly efficient adjunct to the Direct Current Interlocking Motors, has prevented Mr. Reeves from announcing it to the trade at an earlier date. After months of tests and observation and having in the interim worked perfectly on the production of several of the most successful current motion picture releases, the speed control has proven itself beyond a doubt and is here announced as a new and desirable addition to the "Artreeves" line of sound recording equipments. It may be seen on display at The

Hollywood Motion Picture Equipment Co., Ltd., 6416 Selma Avenue, Hollywood, California.

The principle of this new motor is not entirely new but its refinements and its application to sound recording has necessitated a long period of skillful engineering and experimentation to bring it up to the high standards required in sound recording.

This speed control consists in part of a governor which is built into the motor and keeps it at a set speed by the variation of the field current. It will not vary its speed under the regular load variations of the regular sound recording system. It has maintained a constant speed with voltages changing from 90 to 135 volts.

The speed of the motor can be varied while the motor is in operation by simply turning a knob at one end of the housing. The motor as illustrated has two sets of switches to handle two camera motors. There is no rheostat control because speed variations are now monitored automatically.

Unlike other types, this speed control has no parts to get out of order. It has no tuning forks or neon lights to watch, also no master motors. When once set at the proper speed it is not necessary to watch it for speed changes. It may be stopped and re-started, it will again come up to the proper speed without further adjustment.

S.M.P.E. Convention

WASHINGTON, D. C., has again been chosen by the Society of Motion Picture Engineers as the city for their Spring meeting. The meeting is held the first week of this month, and a long and attractive list of papers had been prepared by some of the outstanding technical experts of the country. The convention committee, consisting of W. C. Kunzmann, W. C. Hubbard and M. W. Palmer, have been working for many weeks in preparing for the meeting, and advance reports indicated that one of the largest attendances in the history of the organization would be on hand. The Workman Park Hotel was selected as convention headquarters.

Thrill Air Films in 16 MM.

WHAT should prove to be one of the most interesting groups of 16 millimeter pictures that have yet been offered the owners of home projectors is a series of five air

pictures just placed on the market by the Hollywood Film Enterprises. This series of pictures of the air were made by one of Hollywood's greatest aerial cameramen, Elmer Dyer, A.S.C., third vice-president of the American Society of Cinematographers. Mr. Dyer has made some of the most remarkable air shots that have ever come out of Hollywood, having shot the air scenes for the "Lost Squadron," "Suicide Fleet," "Dirigible," "Flight," "The Dawn Patrol," and many other pictures. The same careful work has been put into these pictures which are now available to the amateur.

First Photocolor Feature

"MEMORY Lane," an original by Myron C. Fagan, will be the first of six color features to be produced by the Photocolor, it is announced by Frank E. Nemec, president of the Irvington-on-the-Hudson color studios. Work starts May 1.

Amateur Movie Making

by WILLIAM STULL, A.S.C.

IT HAS long been axiomatic that "the camera cannot lie."

Like most other such axioms, however, this is only a half-truth. The camera records faithfully what it sees—but it can be fooled into seeing things as they are not. Practically every professional picture made bears witness to this in some degree; some of them, like "The Lost World," "Dr. Jekyll and Mr. Hyde," "Hell Divers," and probably R-K-O's current "hush-hush" production, "The Eighth Wonder," could not have been made were the camera literally truthful. The most select and unpublicized group in the camera business is that handful of men—like Fred Jackman, A.S.C., Lloyd Knechtel, Roy Pomeroy, A.S.C., Frank Williams, and Carroll and Dodge Dunning—who specialize in trick and process cinematography. Every professional cinematographer, too, is called upon on occasion to practice some sort of cinematographic trickery in the task of photographing ordinary productions.

But trick cinematography need not by any means be restricted solely to professional workers. There are many tricks which may very advantageously be used by advanced amateur workers. 16mm. equipment is, on the whole, designed for straight photography; but certain forms of trick work can none the less be done with it if guided by expert hands. But—mark this qualification—trick camerawork is not for the inexperienced or slipshod cinematographer.

16 mm. Trickery

The simplest trick is reverse-action. Professional cameras are almost invariably designed to be run either backward or forward; amateur cameras—with the exception of the Model A Cine-Kodak and the Cine-Nizo—are not; therefore reversed action must be secured by fooling the camera. This is simple enough for even the novice: all that is required is to turn the camera upside-down, and photograph the scene in the usual way. When the film is processed, the scene is cut out and replaced "heads up"—and, presto! there you have your reversed action.

Combining this with the possibilities offered by the multiple-speed movements of the de Luxe Filmo, Victor, Ensign and Cine-Nizo cameras offers an interesting range of possibilities. Of course, in changing the speed at which the film moves through the camera, one must be extremely careful to compensate for the increased or decreased exposure. For instance, if a scene is photographed at a speed of 64 frames per second instead of 16, it stands to reason that the lens must be opened wider to allow for proper exposure; similarly, if the camera is slowed down to 8 or 4 pictures per second, or hand-cranked at still slower speeds, the lens must be closed down considerably to avoid over-exposure. In many cases, with Super-Sensitive film, it will be necessary to use a heavy neutral-density filter, since most cine lenses do not close down to adequately small openings.

The next trick—though it is really so simple as to be no trick at all—is the fade. This can be achieved in a number of ways. There are several devices commercially available for producing fades automatically; but they can be made manually as well. The fade is produced by diminishing the amount of light reaching the film until finally there is either none at all or not enough to produce an exposure. The fade-in is of course the reverse of this. Professional cameras are equipped with double shutters, whose blades may be opened or closed while the camera is running. Amateur cameras, as a rule, do not include such a device. Therefore, the amateur must fall back upon the method used by professionals before the dis-

solving shutter was developed, and make their fades with the lens-diaphragm. This, of course, necessitates a tripod and takes some little practice before the fades can be made smoothly. Due to the speed of modern emulsions, it is wise to use a fairly heavy color or density filter when making lens-fades. Naturally, the same filtering must be maintained during the entire sequence in which the fade is, to preserve the same visual quality throughout.

There are, as previously stated, several devices made for producing fades; these range from the inexpensive "fading glasses" which are simply moved across the lens (quite a tricky proposition, this) to the more expensive automatic dissolves, which clamp on the lens and, by means of clockwork, produce fades of any predetermined length.

A relative of the fade is the iris (or circle) in and out. This is produced by an iris diaphragm mounted in front of the lens, which, when closed, gives the effect of the edges of the picture becoming black, leaving the picture as a circle in the center; this circle becomes progressively smaller until the whole screen is black. Several manufacturers produce these iris-vignetters for amateur use. They are quite inexpensive, and, although the iris, as a professional effect, has been passe for some years, it is a fair substitute for true fades in amateur films.

When using negative film, true fades can be made chemically, after the exposure and development of the negative.

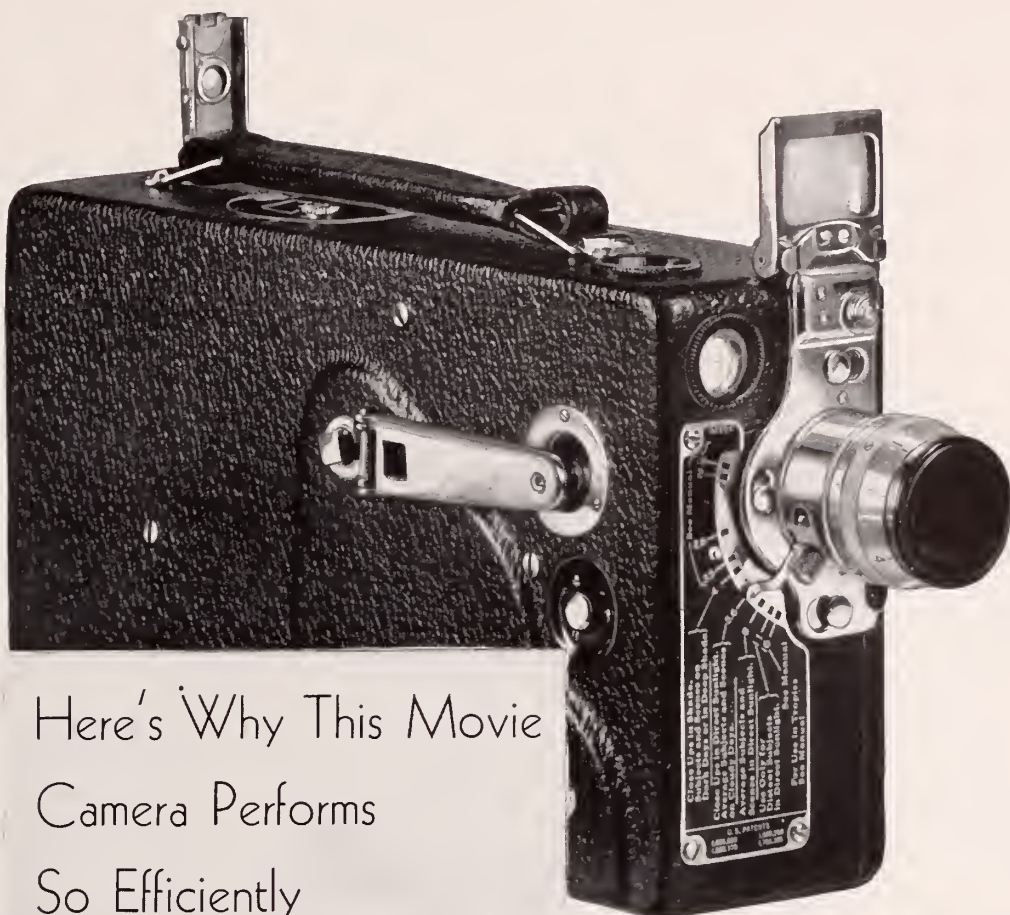
Lapped fades—known in this country as lap-dissolves, and abroad as blends—can likewise be made with amateur equipment, though their making requires rather more skill and precision. At the start of operations, the lens of the camera is removed, and a definite frame (or frames) marked. The lens is then replaced, and the scene and its fade-out made in the usual manner. Then the camera is removed to a darkroom (illuminated only by a light that will not fog the film—green, for panchromatic emulsions; complete darkness is best) and the film rewound to the marked starting-point. The camera is then closed, and brought back to the scene of operations. It is set up, and run with the lens closed (preferably capped) until the exact start of the fade-out. This must be determined accurately, by counting as well as by the footage-meter, which latter is often inaccurate for such precision work. Then, when the start of the previous scene's fade-out is reached, a fade-in is made, utilizing exactly the same footage. The effect is one scene blending into the other.

Double-Exposure

Once the technique of the lap-dissolve is thoroughly mastered, double-exposures may be tried. These involve the same marking of starting-points, rewinding, and timing by counts. In addition, they require that the action be timed by the same counts: that is, the actors must understand that they must perform certain actions coincidentally with certain of the cameraman's counts.

In order to make the two exposures, without having the background of each show through the actors of the other, parts of the field must be matted off. This is best done by the use of some sort of matte-box or effect device, by which the mattes can be placed a short way in front of the lens. The mattes may be made of cardboard, and cut out in any shape required; the mattes must, of course, be exactly complementary. The simplest type of double-exposure to begin with is, of course, the split-screen, in which the mattes divide the screen

(Continued on page 36)



Here's Why This Movie Camera Performs So Efficiently

EXPERIENCED movie amateurs—the world over—regard Ciné-Kodak, Model K, as the standard of value and picture making performance.

The "K" is smartly trim in appearance. Light and easy to carry. Convenient to hold. Its sturdy, dependable motor is always ready for action.

Model K has two finders. One at eye-level provides full vision without squinting. The other is a reflecting finder useful for shooting subjects close to the ground.

The lens can be either an $f.3.5$ or $f.1.9$. Both

are true anastigmats and will perform efficiently along the full range of diaphragm stops. There's an interchangeable lens feature that permits you to shift instantly to a Wide Angle or Telephoto Lens. Loaded with Super-sensitive Kodacolor Film and equipped with a Kodacolor Filter and an $f.1.9$ lens, Model K, makes full color movies.

Your Ciné-Kodak dealer will gladly show you the "K" and some of the movies it makes. Price, with $f.1.9$ lens, \$150; with $f.3.5$ lens, \$110. Carrying case is included. Eastman Kodak Company, Rochester, New York.

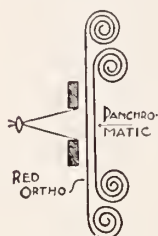
Ciné-Kodak—Simplest of Home Movie Cameras

Color Films

by **WM. S. VAN DOREN**

Du Chrome Film System, Ltd.

NEGATIVES are most satisfactorily produced by means of the DuPack. Any camera may be used. Both Bell & Howell and Mitchell, however, have made changes in their camera gates so that excellent contact between the two negative films is held. Good contact means good color prints.



All other methods of producing non-fringing negatives involve the production of special optical systems for making the negatives and, of course, special cameras.

Double sided positive has a celluloid base coated on both sides. This enables you to make, in the simplest way, duplicate prints. The film stock may be purchased from any of the prominent film makers.

The most essential requirement, at this stage, is a means for printing from the negatives on to opposite sides of the positive in register. Special Dupue printers may be purchased or printers altered to give registration. The simplest way is to have the feed pins also act as dowels and preferably finish feeding the film to the gate, at the gate, and not away from the gate. To do this, have one feed pin fit snugly the register perforation and the other pin fit up and down but narrow to allow for shrinkage sideways. If the printer has two printing windows, have the full feeding pins on opposite sides. There being but one sprocket hole in the negative that can give best registration, it is necessary to use the same perforated hole for that particular printing machine. The registration dowel in the camera, that insures register in the negative will, owing to the negatives being reversed, print on opposite sides of the two negatives.

This, for example, will require that the red or rear negative be printed with the full fitting pin on the left and with the front or green negative that the printing be done with the full fitting pin on the right, where the emulsion side is towards you.

With such a printer, or a light tablet tester, make a graduated print for each negative and after coloring, sliding one over the other will determine which images give the most suitable combination. This determines the light to be used when printing the lengths.

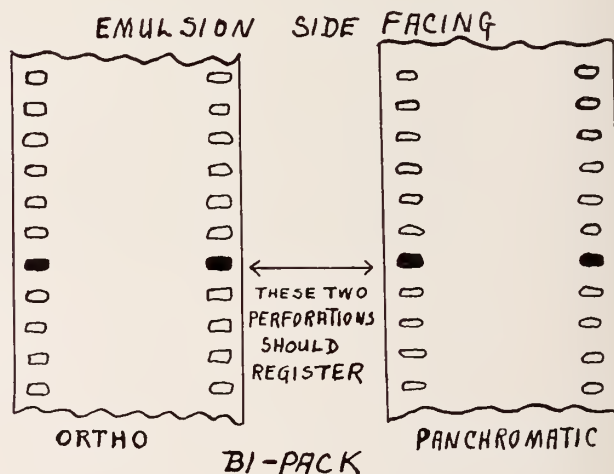
The double sided film now having an image on each side, one representing the red values and the opposite side the green blue values, is developed and colored. The record from the red or rear negative is colored blue and the record from the green blue is colored red.

The simplest method is to use metallic tones of which uranium is used for red and iron for blue.

If the blue iron tone is produced first, it may be put into the red tone without affecting the color of the tone. But do not reverse these steps as the blue bath will alter the red coloring on the film to green. This is like saying that if you let it stand, it will turn to wine. Advantage has been taken of this fact by Waddingham in his U. S. Patent No. 1,633,652.

The first step is to develop the double sided film as you

would for single sided films. It is necessary at the beginning of operations to tone blue the images made from the red negative without touching the opposite side of the double sided film. This may be done in many ways, as with rollers and drips, but probably the simplest is to float the film through a trough. The patent strength of this invention, Mason U. S. No. 1,348,029, has not been settled but it should be free to most users in countries foreign to the United States.



Assuming that you use a trough, then apply to the side printed from the reds a bath composed of:

Iron and Ammonium Oxalate.....	56 Grammes
Hydrochloric Acid.....	20 Ccs.
Potassium Ferricyanide.....	20 Grammes
Water	4000 Ccs.

and from then forward the film may be immersed in a hypo bath, then washed, then into a bath which colors the side having the silver record from the front or blue green negative to red and may be compounded as follows:

Potassium Oxalate.....	10.8 Grammes
Uranium Nitrate.....	29.7 Grammes
Potassium Ferricyanide.....	9 Grammes
Hydrochloric Acid.....	10 Ccs.
Water	4000 Ccs.

It is again fixed, washed and dried. Also it is desirable to varnish the film for the reason that if the film is rolled up and any moisture present, the blue side will convert the red side and cause the color to fade.

The positive print is now ready to project.

Sound, on motion picture prints, is usually toned on the blue side. Leave space for sound print, as usual on a continuous printer, having a strip of celluloid run with it to protect the emulsion on the double sided film.

Many changes may be rung into the red and blue tones, their adjustment being made to the location where used, nature of water used, and so on.

For making tests of this method, motion picture strips with double sided pictures may be tried out by placing the blue tone in a pan and toning one side only. Thereafter following the steps as outlined.

Life History of the Honeybee Recorded in Motion Pictures

MANY plants would fail to seed and many orchards fail to bear fruit but for the work of bees. The honeybee, sole manufacturer of beeswax and honey, is even more useful to man as nature's most active agent in cross pollination. These are two of the facts revealed in "The Realm of the Honeybee," a new silent educational film in 4 reels, sponsored by the Bureau of Entomology, Division of Bee Culture, and produced and distributed by the Office of Motion Pictures, U. S. Department of Agriculture.

In 1922, the department produced a one-reel film, "Bees—How They Live and Work," which is still being distributed. So popular has it proved that this more comprehensive film on the Honeybee has been made. The new film not only shows many activities of this useful insect but corrects some wrong impressions. We learn, for example, that bees do not sting for pastime, but only in defense of the hive, and that when a honeybee loses her sting she loses her life, literally laying down her life for the colony. We also learn that honey can not be manufactured by man—that the bee alone has the recipe for making it.

Most of the scenes were made at the Government apiary at Somerset, Maryland. The cinematography includes some unusual closeups of bees at their ordinary tasks. The film closes with suggestions as to various ways of using honey.

"The Realm of the Honeybee" is a silent film in 4 reels, running time about 50 minutes. Prospective borrowers should apply to the Office of Motion Pictures, U. S. Department of Agriculture, Washington, D. C. There are no rental charges, borrowers paying only transportation to and from Washington.

So great is the demand for the educational films in the department's film library that arrangements have been made by which schools, colleges, organizations and individuals, under certain conditions, may purchase copies made from the department's negatives at the cost of about \$30 per 1000-foot reel on standard-width (35 mm.) slow-burning stock, or \$10 per reel on narrow-width (16 millimeter) stock.

University Students Present Unique "Talkie"

A UNIQUE "talkie" is being presented by a group of students of the University of California. A 16 mm. feature film of two 400-foot reels, entitled "Black Revenge," was first produced by the students without sound recording. This picture is now being shown to the accompaniment of dialog spoken by the members of the cast in person, together with other sound effects. The sound is received by a radio microphone placed in a room adjacent to that in which the picture is shown and from which the screen may readily be seen. The microphone is hooked up with a regular talkie sound amplifier and speaker system.

After a few rehearsals, we are told, the students were able to achieve with this set-up synchronism comparable to regular sound recorded film.

The first showing of the "talkie" was in the nature of a preview given in the auditorium of the new Bell & Howell building in Hollywood. The occasion was a gala one, and so great was the demand for tickets that a repeat performance was necessary. The picture is a travesty on the old-time melodrama and has all the regulation characters of this type of vehicle—the brave but inexperienced young hero, the suave unscrupulous villain, the hard-drinking father, and the sweet young daughter.

The picture has been booked by various organizations, including the Los Angeles Amateur Cine Club. The students responsible for "Black Revenge" are planning a second picture for the near future.

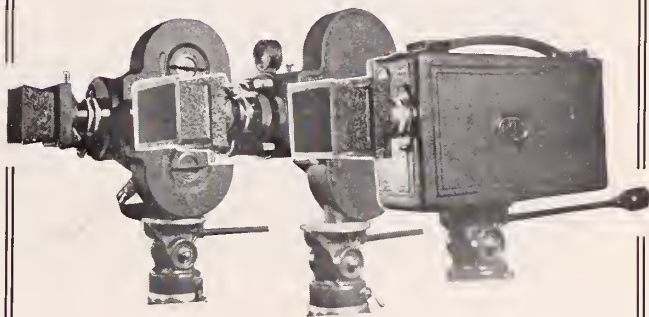
Professional Effects

on 16 mm. with

H. M. S.

COMBINED

SUNSHADE, MATTE BOX and FILTER HOLDER



and HARRISON
H. M. S.
FILTER SETS

Professional Quality 2" Square Color and Effect Filters

Much of the beauty of professional films is due to the use of special color and effect filters which, although commercially available, could not be used with 16 mm. cameras for want of a proper filter-holder. The H. M. S. matte box takes the standard professional two inch square glass filters. These provide not only the more familiar color-correction of the well known "K-series" of yellow filters, but also a wide variety of special effects, such as moonlight and night effects, fog effects, diffusion, and light and dark iris effects that have hitherto been impossible for the amateur cinematographer. The H. M. S. matte box is designed to take two of these filters simultaneously, permitting many combinations of color-correction and diffusion, color-correction and special effects, etc.

The H. M. S. matte box will fit any standard 16 mm. camera. It is mounted directly on the lens, and held in place with set-screws and special fittings, so that while in use it is rigidly in place, but instantly detachable. It can likewise be fitted to a number of semi-professional 35 mm. cameras, such as the Eyemo, de Vry, etc., and to still cameras whose lenses do not exceed 1 1/2 inches in diameter. **It is important, in ordering, to inform us as to the camera, lens-equipment, and lens-mounts with which the matte box is to be used.** Price \$7.50. A small extra charge is made in cases where the matte box is to be used with more than one lens, or where it is to be fitted to 35 mm. or still cameras or special lenses.

HOME MOVIE SCENARIOS, INC.

1220 Guaranty Building

Hollywood, California

Los Angeles Amateur Cine Club Invades Studio



International News Photo

◆ The night of April 11th was a banner evening for the members of the Los Angeles Amateur Cine Club. The meeting was held at the famous Fox Film Studios on Sound Stage No. 1. Studio electricians were on hand to furnish the lighting, and players from the Fox Organization were present as photographic

subjects. Members brought their cameras and "shot" to their heart's desire. A prize will be presented at the May meeting for the picture made at the Fox studio that evening. The April meeting was arranged by K. H. Ralke in behalf of the National Theatre Supply Corp.

Dramatize Your Home Movies . . .

Stop aimless "shooting" and make real motion pictures !!

Complete Scenarios which enable you to make perfect photoplays with your own group-family-friends or club are now available at a very reasonable price. These scenarios have been prepared by professional writers, directors and cameramen. Every detail has been carefully worked out. All you have to do is

DIRECT and PHOTOGRAPH the PICTURE

These scenarios are furnished for 400 ft. features or 100 ft. shorts. With each H.M.S. Scenario are included a scene numbering slate and a complete set of art titles on 16 mm. films, with full instructions.

Prices: 400 ft. Features, \$15.00

100 ft. Featurettes, \$6.50

Write for Complete List of Stories

ART TITLES

Single exposed, double exposed on art backgrounds.
Prices on request.

EDITING

For pictures from our scenarios.....\$5.00
All other editing.....\$2.50 per hour

HOME MOVIE SCENARIOS, Inc.

1220 Guaranty Bldg.

Hollywood, California

New Home of Hollywood Camera Exchange



THE Hollywood Camera Exchange now boasts one of the finest photographic equipment establishments in the west. Their new quarters, opened early in April, are located at 1600 Cahuenga Avenue, in the heart of Hollywood.

The growth of this Camera Exchange has been remarkable. Only two years ago Cliff Thomas and Arthur Reeves started it, and immediately this pair of veteran cameramen met with success. The original store was expanded, but still more room was needed. Their new store is extremely attractive and contains anything that either professional or amateur cinema-

graphers might desire, as well as a complete stock for the still photographer. There is a machine shop for repairing of all kinds and for experimental work. Two dark rooms are at the disposal of customers, and there is a projection room equipped for both 35 and 16 millimeter picture projection. The Exchange is becoming widely known as the place where the amateur may meet the professional, and amateurs visiting Hollywood are invited to use the facilities of the Exchange while they are in California.

Victor Introduces Pocket Titler for Victor and Filmo Cameras

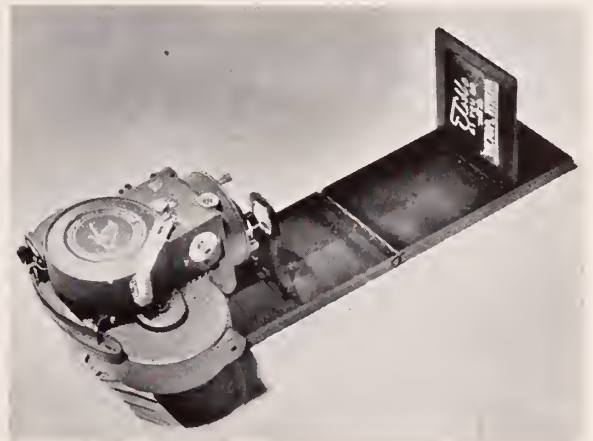
NOW you can "Title as You Go." The new Victor Pocket Titler, just announced, is so small, light and compact that it may be slipped into the coat pocket for use in making titles between scenes any place at any time.

It is felt that the Victor Pocket Titler will appeal particularly to movie makers because of the ease with which titles may be made with it, and the fact that it may be carried about without inconvenience.

The elements of the Pocket Titler are collapsible and when not in use, it folds up much like a cigarette case. Closed, the outside dimensions are 1"x4 1/8"x7 3/4" and it can be carried in your pocket easily.

Setting the Titler up is only the work of a moment. The camera rest consists of folding standards which are shaped for the camera in such a way that it is not necessary to adjust or fasten the camera in place. Titles may be made indoors or out with the pocket Titler. Artificial illumination is not required in daylight out of doors or inside near a window. When artificial illumination is required, it is only necessary to hold a lighted bulb above and near the front of the camera during operation.

It will be seen from the construction of the Pocket Titler that the opportunity is afforded for obtaining a variety of effects. Any kind of background desired may be employed. Titles on long strips may be slowly pulled through the card holders to give a running effect. 3 1/4x4 inch Photographic



Prints or clippings may be used as backgrounds. Translucent effects may be obtained with back lighting through an opal glass used in the holder. Small objects, insects, butterflies, leaves, flowers, etc., may be employed to advantage for achieving interesting results.

Good titles are absolutely essential if one's films are to contain the interest-holding value that will make them appropriate and desirable for showing outside the family group. With the new Victor Pocket Titler, title making should cease to be a problem and a tricky job, and become instead, a simple, easy, pleasant pastime. The Pocket Titler is available in 20 mm. and 1 inch lens models for both the Victor and Filmo cameras.

Amateur Movie Making

(Continued from page 30)

into vertical halves. This mastered, more complicated mattings may be essayed, dividing the screen into quarters, etc., or matting off irregularly-shaped portions.

Ghost effects may be made by the same method, the ghost or vision being photographed against a dead black background—velvet or heavy black flannel or felt is best. This sort of thing is best photographed indoors, by artificial light, and the lighting must be so arranged that no light falls on the back-drop. This type of double-exposed shot does not, naturally, require masks, for the background should be seen through the ghost.

All of these effects are best secured by cameras that permit focusing the full aperture either on the film or on a ground-glass screen, with the lens in exactly the location used in photographing. Naturally, a tripod must always be used. In matted shots, the tripod must not be moved between the two or more exposures.

If the amateur is possessed of artistic talent, or can command it, matte shots of the type described by Fred Sersen, of the Fox Studio, in the last volume of the Cinematographic Annual, are possible. Similarly, human actors may be double-exposed into miniature sets, and documentary films showing actions that are to be compared, side by side, can also be made.

With cameras such as the Model A Cine-Kodak, which can be adapted to take two films simultaneously, it is theoretically possible to make travelling-matte shots, as outlined in Gordon Chambers' article on "Process Photography" in the same book. This work will, however, be extremely difficult, and exacts the utmost precision from both the camera and its operator.

With the new Super-Sensitive emulsions, and the new and more powerful projection-lights, it is possible, too, to attempt projection cinematography; projecting the animated background on a large screen behind the actors, (projecting from the back, of course), while photographing the combined action with a synchronized camera in front. To do this, one must have a hand-driven camera, and drive it with a special electric motor electrically synchronized with the projector-motor, so that the shutters of camera and projector are both open and both closed at the same time. Naturally, this involves considerable rebuilding of both camera and projector, and considerable expense; but it is entirely possible, and can be productive of very interesting—and otherwise impossible—effects.

Animation and Other Trickery

Animation has been discussed in these columns several times. It involves merely the exposing of one frame at a time. By its use, drawings, toys and dolls can be made to move in apparently lifelike action. Similarly, the progress of a building, the growth of a plant, or any similar action can be photographed so as to make the actually slow process apparently unfold our eyes in a few minutes on the screen. This is done by making one exposure—one frame—every so often. It can be done by hand, if the action is relatively short, or by an easily-built mechanical escapement if the actual time elapsing is long. The interval between the exposures must be governed by the actual growth or progress of the subject and the length of screen time desired for the completed film.

Miniatures

In professional films, much action, such as train and auto wrecks, etc., is photographed in miniature. This can be done equally well with amateur cameras. However, the problems of scale, speed, etc., are quite intricate. As a rule, toys—even the best—cannot be used. Miniature work requires scale models that are extremely accurate reproductions of the actual thing, and of course, miniature sets that are scaled to the same proportions as the models. The lenses used, and the speed at which they are photographed, must be perfectly proportioned to the miniature used. High-speed is frequently

preferable, as it tends to smooth out the action. The subject of miniature cinematography is rather too intricate to be adequately discussed in the limited space here available, but it was quite fully discussed in "The American Cinematographer" (November, 1931) by Don Jahrous, of the R-K-O miniature department.

Optical Effects

Last, but not least, a tremendous range of effects can easily be produced by the use of optical accessories—distorting prisms, and the like—placed in front of the lens. By their aid, you can make the camera see double or treble, see things distortedly as in a nightmare, or (for stealing interesting action) see around a corner, at right angles to the way the lens is pointed. Some devices for these tricks may be purchased ready-made from various camera manufacturers; but these devices are only the beginning, for one can easily make others up from standard prisms, etc., available at any opticians. Their use is bounded only by the ingenuity of the cinematographer, and by the requirements of the scene or story. But—one final hint—don't exceed the limits of good taste in their use. After all, the important thing in any motion picture is, not the trick effects in it, nor even the way they are employed for dramatic effect, but the story itself, and the expertness of the cameraman in so perfectly photographing that story that the story, and not the photography is the center of the audience's interest.



First International Exposition for Artistic Photography

THE First International Exposition for Artistic Photography, to be held in Lucerne from July 23 to August 21, promises to be a most important event. It will be the first international manifestation of its kind ever arranged and as such it is certain to be of interest to amateur and professional photographers all over the world.

The Lucerne exposition has the purpose to acquaint the international public visiting this lovely Swiss tourist metropolis with the progress made in the field of artistic photography. It will moreover afford an opportunity to all parties interested to display their own photographic achievements.

Information regarding conditions of admission and all further particulars are contained in a specially prepared program which may be had free of charge from the Secretariat of the First International Exposition for Artistic Photography at Lucerne. The time limit of admission is July 10.



Russia to Emulate Hollywood Methods

THE Soviet government is planning to recognize the production of Russian films along Hollywood lines. It will construct a central production plant in the neighborhood of Moscow. Two million rubels have been allowed for this purpose. It is reported that Pudovkin will have charge of the project. It is officially reported here that the two raw film plants built in Moscow last year are now turning out 60,000 meters of raw stock daily, and that the output is to be doubled during the current year. If carried into effect this will make Russia independent of foreign countries for its supply of raw film stock. When the two plants are enlarged they will be capable of turning out enough raw film to supply Russia's requirements which is about 40,000,000 meters a year.

Order Your
Vol. 2
Cinematographic Annual
NOW!

Announcing... Another

valuable equipment

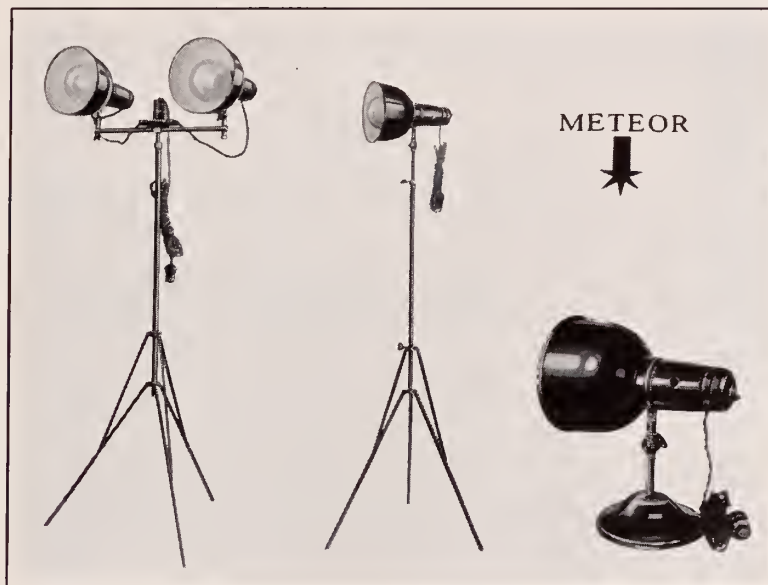
PRIZE

in the

**American
Cinematographer**

\$1,000.00

**Amateur Movie
Contest**



Above is the equipment prize announced on this page

The AMERICAN CINEMATOGRAPHER takes pleasure in announcing to all Amateurs that...

Meteor Photolight Company

will present to the winner of FOURTH cash prize the following valuable lighting equipment: A Meteor Double Photolight complete with two 500 watt NERON bulbs, retail price, \$30.00, a Meteor Photolight Tripod model, complete with NERON bulb, retail price, \$18.00, and a Meteor Photolight Table model, complete with bulb, retail price, \$13.50. Value of prize, \$61.50.

No restrictions whatever are attached to this prize. It goes unconditionally to the winner of the FOURTH cash prize of \$100.00 which will be presented by the AMERICAN CINEMATOGRAPHER. This makes the value of fourth prize \$161.50. Here is an opportunity to secure a complete home lighting equipment at no cost, a prize well worth trying for. The high quality of the lighting equipment made by the METEOR PHOTOLIGHT COMPANY is well known.



THE CASH PRIZES IN THIS GREAT CONTEST ARE

First Prize, \$500.00

Second Prize, \$250.00

Third Prize, \$150.00

Fourth Prize, \$100.00

TURN TO THE NEXT PAGE FOR FURTHER PRIZE ANNOUNCEMENTS

ANNOUNCING...



The H. M. S. Matte-box, mounted for use on a 16 mm. Victor camera.

*Two Additional
Equipment Prizes in the*

**AMERICAN
CINEMATOGRAPHER**

\$1,000.00

Amateur Movie Contest

The American Cinematographer takes pleasure in announcing to Amateurs that two more prizes have been added in this contest. They are:

Home Movie Scenarios, Inc.

Offers two prizes as follows: To the winner of first prize of \$500.00, one Scenario (choice of entire group), one H.M.S. Matte-box, choice of any H.M.S. Filter, and one H.M.S. Scene Slate. To the winner of second cash prize of \$250.00, one H.M.S. Matte-box and choice of any H.M.S. Filter.



In case the picture winning first prize is made from an H.M.S. Scenario, an additional cash prize of \$100.00 will be paid by Home Movie Scenarios, Inc. If second prize is made from an H.M.S. Scenario, an added prize of \$50.00 will be awarded; and an added prize of \$25.00 will be given winner of third prize if made from an H.M.S. Scenario.



Other equipment prizes that will be presented in this contest, in addition to the four cash prizes, totalling \$1000.00, are: two prizes from the BELL & HOWELL Company. First—a choice of a Filmo 70 DA Camera or a Filmo Model J. L. Projector. Second—a choice of any standard Cooke Telephoto Lens. From the EASTMAN KODAK COMPANY, a Model K Cine Kodak, with a f.1.9 lens, complete with carrying case. From MAX FACTOR MAKE-UP STUDIOS, a Max Factor Make-up Kit, completely equipped with every necessary article of make-up needed by the amateur. From METEOR PHOTOLIGHT COMPANY, A total of \$61.50 worth of lighting equipment.



For Further Details of this Contest See Opposite Page

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. A total of **\$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of \$500.00 for what its judges consider the best 16 millimeter or 9½ millimeter picture submitted in this contest. \$250.00 will be given as second prize; \$150.00 as third prize; and \$100.00 as fourth prize, a total of \$1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after

the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9½ millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg., Hollywood, Calif.

Enclosed please find Check, or Money Order, for \$3.00 (\$4.00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year:

Name.....

Address.....

It is understood that this subscription makes me eligible to enter your \$1000.00 Amateur Movie Contest.



CARL ZEISS LENSES

for
Cinematographers

Tessars F/2.7,
F/3.5, F/4.5

Biotars
F/1.4

Cinematographers throughout the world are using Zeiss Lenses because of the assurance of perfect definition and brilliancy.

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Two New Cameras Announced by Victor At Reduced Prices

KEEPING in step with the present-day trend toward greater values and reduced prices, the Victor Animatograph Corporation, makers of the Victor 16 mm. cameras and projectors, announces two new 16 mm. cameras to its line at new prices far below any former Victor figures. The cameras are Model 3 and Model 5.

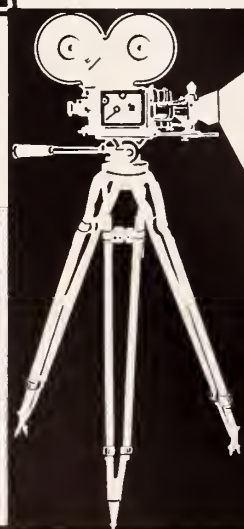
On the Model 5 Victor (the original visual focusing, 3-lens turret 16 mm. camera) there has been a reduction of approximately 22½ percent in price. All of the previous features of the Model 5, such as Visual Focusing, 5 Speeds, 3-Lens Turret, etc., have been retained. The new features are: Attached Winding Crank, which may also be employed for hand cranking; Graduated Adjustafinder for accuracy in "finding" and centering the image at different distances; combination Visible-Audible Film Footage Meter of extreme accuracy; Film Loop Guard which makes it impossible to lose the film loop, regardless of the thinness of the film or length of time the loop has "set" in the camera; Improved Collapso-strap carrying handle; Rich, Gold-flecked Brown Lava Finish with satin Black and polished chrome trim and appointments. Standard lens equipment on the Model 5 Camera is the 1", F 2.9 Hugo Meyer Trioplan. Any selection of 3 lenses that the purchaser may desire can be supplied at the price of the camera plus the published list prices of the selected lenses.

The Model 3 Victor, which was the first 16 mm. camera to be equipped with multiple operating speeds, including slow motion, is being offered with the new collapso-carrying strap, chrome plated chain-attached crank and crank clip, and with 20 mm. F 3.5 Fixed Focus Dallmeyer Lens at a price reduction of nearly 35 percent.

Both the Model 3 and 5 Victors can be supplied with any choice of lens or lenses that the purchaser may specify. Lenses of all makes, speeds and focal lengths are interchangeable on the two instruments.

Kodacolor movies may be made with either the Model 3 or 5 Victor Cameras when equipped with the proper lens and the Kodacolor filter assembly.

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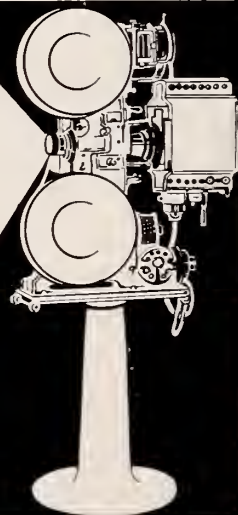
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The New Leica Camera Model D

AUTOMATIC focusing control for the LEICA Camera! A new model Leica with built-in range finder and automatic focusing lens has been introduced by E. Leitz, Inc. New York City. This new camera presents the most revolutionary development in camera manufacture since the introduction of the first Leica Camera.

The range finder, previously a separate instrument, is now built into the camera itself and by an ingenious connection of the finest precision this range finder is actuated by the helical focusing mount of the lens. When taking a picture the subject is sighted through the range finder eyepiece, situated immediately to the left of the view-finder opening at the rear of the camera. Two images of the subject will be seen, and as the mount of the lens is turned the images will appear to separate or approach coincidence. When coincidence is established the lens is automatically in focus. The release then is pressed with every assurance of getting a perfectly sharp picture.

In appearance the new Leica, known as Leica Model D, does not differ greatly from the previous models. The range-finding mechanism is contained in a black metal housing on top of the camera, extending from the shutter dial to the rewind knob. The view-finder retains its position and from the front is flanked by the two small openings for the range-finder. The dimensions of the Leica are unchanged, and there is no appreciable increase in weight.

The new Model D Leica has all the focusing advantages of a reflex camera, with none of the bulk, and retains all the typically characteristic advantages of former Leica models. The range-finder, although shorter than the ordinary meters, is even more exact. Images are brilliant and cleancut and easily distinguished. The subject is either precisely in focus or obviously out of it—a fact not so easily determined in the reflex or ground-glass type of focusing camera, where sharpness falls away gradually. Where extremely rapid work is being done the range-finder may be used as a view-finder by focusing on the center of the subject and pressing the release as soon as coincidence is established.

For sport work, rapidly shifting street scenes or photography of children the new Model D Leica is admirable. Moving objects are easily followed and kept in sharp focus up to and through the instant of exposure. The combined shutter setting and film winding feature, found on all Leica Cameras, in conjunction with the new principle of automatic focusing offers the acme of camera simplicity.

Re-winding of the film into the magazine also has been simplified in the Leica Model D by making the re-wind knob to be pulled up clear of the camera body for turning.

A new booklet is available from E. Leitz, Inc., 60 East 10th St., New York, N. Y., giving complete information about the new Model D Leica Camera.



Production in Vienna is Getting Under Way

NEGOTIATIONS between German and Austrian producers of films are reported to have reached a successful conclusion. The Berliner Pokjektograph will soon start a production at the Sascha studios, in association with the Viennese company, Wiener Leighfirma Kopplemann. The Sascha studio has been leased for several months. Lamac-Ondra started filming a comedy there early in April, cooperating with the Viennese firm, Hugo Engel. The Wiener Mondial announces two productions, one to be a super. Kiba is renovating the Vita studios and expects to begin production there by June. Improvements are under way at the Schoenbrunn studios.

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LITERATURE ON REQUEST

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The Miniature Camera

(Continued from page 17)

Graflex and its slower lens. This of course robbed the little camera of much of its thunder. The few real negatives that I obtained proved to me that the miniature camera was my ideal.

The next camera to venture into the miniature field was the Leica. Due to its revolutionary type of construction and to the first attempt of a manufacturer to specialize in miniature camera equipment from the taking of the picture to the finished enlargement, it was an immediate success. Strange as it may seem the Leica did not enjoy its greatest success in Hollywood. It was not until the Model "C" Leica with its interchangeable lenses arrived, that the Hollywood cameramen became aware of its existence and the fact that thirty-six pictures could be made on five and one-half feet of motion picture film. With the advent of super-sensitive panchromatic film the Leica was of still greater value to them. Here was a means of finding out something about this strange film whose filter factors did not run 'according to Hoyle.' With the little camera it was very easy to test any filter or group of filters in a few minutes. It was easy to find out just how fast this new film really was and how it behaved out-of-doors in various kinds of light. These tests, you might say, were for personal information and might not have been made were it necessary to use a large motion picture camera. The film could be processed by the laboratory in the usual manner and due to the size of the image, the results could be better ascertained than by looking at standard size motion picture frames.

Now you will understand why it is so hard to buy a second hand Leica in Hollywood. When a dollar will buy enough short ends of the finest kind of panchromatic film to make about seven hundred pictures and when accessories and improvements are being added to the Leica fast enough to keep even the most jaded cameraman enthusiastic, what more can you ask of the miniature camera.

I can well imagine the astonishment many people will have when they hear of the latest improvement that has been added to the Leica camera. There seems to be no rest for the designers of miniature equipment. The new Leica will be known as the Series II. Its outward appearance and size is about the same as the model "C." The chief difference is that the range finder is built into the camera. You now obtain the correct focus by looking through the range finder and moving the lens in the focusing mount until the two images in the finder coincide. The lens is then in the exact focus of the object focussed upon. Lenses are still interchangeable and the stereo-adaptor may still be used. With this new improvement it is now possible to watch the correct focus of the object you are photographing as with a reflex. You can imagine how valuable this feature will be to those who wish to make candid pictures as well as other kinds.

A word of description about some of the other miniature cameras. The Rolleiflex, the Pilot, the Kolibri, the Derby, the Pupille, the Ranca, the Mankinette, the Picco Chic and others make sixteen pictures (except the Rolleiflex which makes twelve) on a roll of vest pocket film which sells for twenty-five cents. These little negatives vary in size from $1\frac{3}{8} \times 1\frac{5}{8}$ inches to $1 \times 1\frac{1}{2}$ inches and all make splendid enlargements. The most of the cameras are fitted with fast lenses (f3.5 and faster). The Rolleiflex and the Pilot are of a reflex type with twin lenses. The mirror is in a fixed position and it is always possible to see the image in focus and through a wide-open lens.

The miniature camera offers a means of making many pictures inexpensively thereby allowing you to enjoy your camera more. The miniature camera is by no means a toy. It is thoroughly professional in every respect. Some of the enlargements made from the negatives of these little cameras I am confident will astonish you. If you are still using a large camera, visit your nearest photographic supply house and see this Rip Van Winkle who has returned, with a new set of glands, the MINIATURE CAMERA.

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Character Make-Up

(Continued from page 9)

artist or the actor, but to help to tell the story. Therefore, the makeup must not be obviously "makeuppy." This in turn demands that the makeup be supervised by a qualified makeup artist, for the actor—no matter how skilled he may be in the technical details of applying his makeup—rarely has the right perspective to enable him to judge the makeup without bias. Some few actors there have been, of course, who have proven themselves artists in makeup as well as in acting: Lon Chaney was one, and Emil Jannings another; but even these frequently erred for lack of the detached, impersonal viewpoint. Therefore, it has always been my policy, for the protection of the actor quite as much as for the protection of the studio and myself, to insist that I supervise all such makeups, regardless of the ability or importance of the player. In practice this has worked out to excellent advantage, for if the player was not skilled in makeup, I have had a free hand; and if he was, I have had a capable and doubly interested fellow-worker. When working with such artists as Jean Hersholt and Lucien Littlefield, I have found that the intelligent cooperation they were able to give was of inestimable value to both of us.

In some studios, it is the policy to assign a makeup man to every company, regardless of the nature of the picture. I regard this as basically wrong. It saddles the company with unnecessary expense, and too frequently gives the actors the feeling that the makeup artist is there merely to serve as a valet or ladies' maid, to fetch and carry powder-puffs at their bidding. Furthermore, any cameraman who is qualified to have charge of the photography of a modern production is certainly familiar enough with makeup to know when a makeup is wrong, or when one needs repairing. Why, then, have two makeup men on the set, as is actually the case when both a first cinematographer and a makeup artist are retained?

As regards the cooperation that must exist between the cinematographer and the makeup artist, I have always found this readily obtainable. For, if the cinematographer is naturally more or less of a makeup artist, so too, from the nature of his work, is the makeup artist something of a cinematographer. Personally, I feel myself rather favored in this connection, for before I became a makeup artist I was a cinematographer, working my way up to a camera through the laboratory and an assistant's job. Therefore, I can not only speak the cameraman's language, and understand his problems and requirements, but view rushes and makeup tests with a cameraman's eye and judgment; if anything is wrong in either photography or processing, I can see it, and make allowances for it in judging my work, without any delays, or asking of questions. Yes, I am convinced that camera and laboratory training are vital for a makeup artist.

Looking forward, the future holds great possibilities. Makeup is only beginning to reach its artistic stride. We have far to go, just as cinematography has. Color, third-dimension, and all the other developments that lie in the future offer us as great possibilities and as great problems as they offer the cinematographer. But if the present close cooperation between the two crafts is maintained and improved, nothing is impossible.

New S.O.S. Catalogue

THE S.O.S. Corporation of 1600 Broadway, New York City, has just issued one of the most comprehensive catalogues dealing with sound equipment that has come to this writer's desk. Of particular interest is a large section devoted to rebuilt and reconditioned sound apparatus covering everything used in the making and showing of pictures. Anyone looking for used equipment would do well to write for this catalogue. It will be gladly mailed if you mention this notice.

GOERZ

CINE LENSES

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f:2.7

It should be welcome news to cinematographers contemplating the purchase of a wide angle lens for amateur movies that a drastic price reduction has been effected in the Kino-Hypar f:2.7. Formerly sold at \$57, its present price is \$45. This includes finder lens when required. Its speed and unusually fine corrections ideally adapt this lens for all purposes of interior, sport and panoramic photography.

Goerz Effect and Title Device, enabling the amateur to create professionally artistic titles and a variety of effects has been reduced from \$172 to \$150. It is suggested as the ideal purchase to the camera club for the general use of all its members.

Literature on request.



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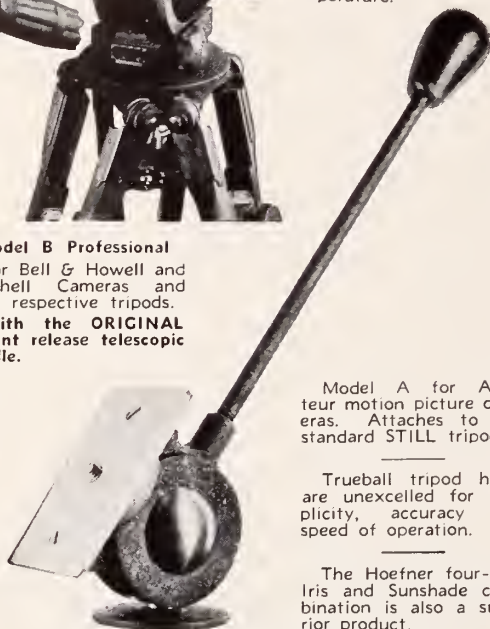
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c/o The American Cinematographer

Army Air Corps Studies New "Zoom" Photographic Lens

THE WAR and peacetime possibilities, in military aerial photography, of the new "Zoom" lens recently developed by the Bell & Howell Company for standard motion picture cameras are attracting the attention of the United States Army.

This lens was primarily developed to "zoom" or "swoop" down on a subject or to recede from it without moving the camera or scene. For instance, with the new lens, a parachute jumper can be shot as a "close-up" all the way down to a landing place, or he can be photographed alternately "close-up" and at actual distance. In such operations the positions of the lens elements are changed, but the position of the camera remains the same.



Lieut. Geo. W. Goddard, director of the Photographic Department of the Army Air Corps at Rantoul, Ill., has just completed a series of airplane photographic tests of this lens in flights over Chicago which disclosed tremendously interesting results from a military standpoint.

It has been established by these tests that, in wartime, observation personnel flying over enemy lines at an altitude of 30,000 feet, for example, can readily obtain for minute military study large detail photographs of certain locations, such as centers of resistance, munition depots, embarkation points, etc., or take small scale pictures of large areas for general observation or mapping purposes. The large scale photographs taken at this altitude will have the appearance of having been shot at approximately 5,000 feet.

The lens operation is so simple that a pilot photographer in a single seater airplane can change to telephoto adjustment, and vice versa, by merely moving by remote control a small lever attached to the lens.

With the development of anti-aircraft guns and the new high-altitude planes, photography will necessarily be carried on at exceedingly high altitudes in future wars, and it is believed that the Zoom lens will be a military necessity in both still and motion picture photography.

In peace times, army and other photographers can fly 'way above the minimum altitude of 3,000 feet set by the Department of Commerce and secure pictures equivalent to those taken at an altitude of five or six hundred feet.

In order to obtain uniform scale in aerial mapping operations over areas where the terrain changes rapidly, it has heretofore been necessary to use several cameras each fitted with a lens of a different focal length. Now the Zoom lens, installed in a single aerial camera, will make it possible for the photographer to compensate readily for all changes in scale and altitude during flight.

Globe Trotting Cinematography

(Continued from page 22)

wiring. Luckily we got the picture, but Norman's sad face told me what had happened. There was the big cigar, peacefully on her way; too far away to even hear her engines and I with a silent takeoff. This was before we had stock sounds in the lab. In a desperate effort we rewound the negative, and I tried to imitate vocally, the sound of the Graf's engines. The sound department said it was excellent motor noise recording, as we nudged each other in the projection room.

The interior of Central and South America offers a wealth of picture and sound material, but it also has its store of grief. On one occasion we wanted to shoot a native ceremony. All went well until darkness set in. The festivities were to last several days, but the best stuff happened after dark. Our flares had become wet and only sputtered or exploded on being ignited. We had shot a lot of footage on a story that was not complete. It would have been hard to explain this to our New York office. We went into a huddle. Miles away there was an airport. After a long ox-cart trek we found their landing lights perfect for the work. Back we went with a goodly supply of gorgona, (native rum). After much persuasion the troupe agreed to stage the rest of the dancing near the lights. With the rum and bright lights, the frenzy of our cast was a joy to behold. Unfortunately the natives had learned about dollars. Their demands for money were more than we could stand. Slowly while our interpreter consoled them, we packed our junk. Then with the lights out, we dashed away, but the rum had gotten in its work and our departure was made in a rain of stones, sticks and chunks of earth, but we had our picture.

On expeditionary photography, almost anything can happen, and usually does. It's best to be prepared but not overloaded. With a good camera, plenty of film and lots of ingenuity, you can get what you are after and have fun doing it. A lean horse for a long race. Too often one finds too much junk on the list of equipment, with the result of too little worthwhile material on the film when one returns. Trust your wits brother and save your back. Remember you are an artist, not a truck horse. With present portable sound units, the old truck is done away with and much shooting can still be done silent. If you must take a car or two take light ones. Light weight is as important as in a horse race.

Regardless of what you plan to shoot, or where, always bear these in mind; comedy . . . thrills . . . human interest . . . novelty, for every bit of film should entertain, with these in mind, yours will.

"Rico" Announces Departure of Engineer

"RICO" announces that their engineer, Carlton W. Faulkner, has sailed for Lahore, India, to deliver a new "Rico" trunk channel recording unit, and to supervise production of Indian pictures with this equipment.

Following completion of his duties in Lahore, Mr. Faulkner will make further "Rico" sound installations, and remain in India indefinitely, heading the "Rico" engineering organization in that country.

Communications for Mr. Faulkner may be addressed in care of the following "Rico" representatives. B. N. Sircar, 1 and 2 Old Post Office St., Calcutta, and M. L. Mistry, 46 Church Gate St., Fort Bombay.



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Sound Film Editing

(Continued from page 12)

light passes through and the cutter is able to handle both films without interfering with his observation of the picture.

Experienced editors require the sync'ing machine mostly for lining up sound effect and musical tracks after the picture has been cut, enabling them to run the action on one set of sprockets; the dialog on the second, the sound effects on the third, and musical or other background noises on the fourth set. In this manner, the editor can run all of his film through the synchronizing machine at one time, matching in everything in the one operation.

There are two different type patches used in the cutting room,—one which covers the full sprocket and the other covering only the half sprocket. At Universal we find the half sprocket most satisfactory, because that type seems to pass through the projection machine more readily, not tearing apart after repeated use as does the full sprocket patch.

Each editor is of course assigned one or two assistants, each of whom should have speed, care and system in the handling of his film. System in the cutting room naturally results in cleanliness. Film at all times should be kept on file in cans and in fire protection cabinets. Fire is a hazard in any part of an organization where film is being handled and the less film that is exposed, the less the hazard. Particular care should be taken to expose as little film as possible and the efficient editor—with the assistance of an efficient assistant—will have very little film about his room at any one time.

The following mechanical devices really comprise the fittings of a cutting room: Metal re-winding tables, each table with one set of re-winders and racks for the filing of small rolls of film—with either artificial or natural light in the background, facing the rack. Steel cabinets for the filing of excess film; combination sound and silent moviolas; film bins and clips for the clipping together of film preliminary to splicing and also the necessary reels required in the handling of the film.

I again want to add that editing involves a great deal of careful and intelligent work. Give an efficient editor the above mentioned equipment—plus one pair of scissors—and no picture is too great a task for him.

I have found it a great advantage to surround myself with men who have a number of years' experience in back of them. In general the longer the experience, the greater the proficiency. An editor with the handling of each picture, learns and experiences situations which perhaps have not confronted him before and in time becomes thoroughly familiar with dramatic, comic and fast tempo situations. Often he is able to create situations in the picture which, from all appearances, the film would not permit.

Philadelphia Schools Use 80 Projectors

TYPICAL of the large public school visual education department is that of Philadelphia, where more than eighty Filmo projectors are already at work in the schools. Dr. James G. Sigman, Director of Visual Education, has a library of over 2,000,000 feet of 16 mm. film at his disposal. In an article in the Philadelphia Evening Bulletin he was quoted as saying, "All the junior and senior high schools and 40 per cent of the elementary schools now have motion picture projectors . . . The department is still in its infancy, but is increasing the scope of its work annually . . . A new service which we have installed is the taking of pictures of outstanding events in the various schools. To date this has been chiefly confined to sports. Last year we took 40 reels of movies of track meets, football games, and other happenings of interest to pupils."



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Chicago Daily News Becomes RCA Photophone Licensee

THE Chicago Daily News has become an RCA Photophone recording licensee and is arranging to install complete RCA Photophone recording equipment shortly, according to an announcement by the RCA Victor Company.

Preeminent in their several fields of activity as publishers of The Chicago Daily News, operators of radio station WMAQ, and world wide producers of The Universal Newspaper Newsreel for Universal Pictures Corporation, The Daily News is expected to expand its motion picture activities into other fields.

The Daily News is licensed to produce films for commercial and newsreel purposes and has concluded a special arrangement with RCA Victor for reducing its 35 mm. film to 16 mm. size for the new RCA Photophone portable projector. This arrangement makes The Daily News sound facilities available for special commercial work in sound as well as for the coverage of news subjects for inclusion in the newsreel.

The Daily News license agreement was the first ever made with an American newspaper for sound equipment.

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What's What

EASTMAN FILMS

Who's Who

Gerrard Home From England After Year in Large Studios

ANOTHER Hollywood cameraman has returned to his native heath after demonstrating to his British brothers that Eastman super-sensitive panchromatic negative carries a lot of real weight in helping to build cinematographic reputations.

During the past year Mr. Gerrard photographed three features for British International and two features for M. G. M. Mr. Gerrard is one of the oldest staff cinematographers of the local Paramount Studios, having served at the local lot for about eight years. As we go to press negotiations are being carried on between Mr. Gerrard and another major studio whereby he will be assigned an important feature, which will be in production for ten or twelve weeks.

What the Cameramen Are Doing to Keep Hollywood on Top

Ralph (Whataman) Staub

When we were a little boy we remember a low, lovely lilting tune called "Whistling Rufus." The lyric told a story about a very clever guy who was a one-man band. Now we find his counterpart in Ralph Staub, who really is a one-man producing unit. Mr. Staub operates at the Columbia Studios, where he produces the popular "Screen Snapshots." Ralph writes his own stories, selects his own cast, directs the action, and then takes his place at the camera and takes care of the photography.

From the camera he jumps to the mike and does his own particular style of "Walterwinchell"; and from there he goes to the job of editing. Thus far we have had no information that Ralph has actually helped sell the pictures nor has he to our knowledge ever operated the projection machine for the exhibitor who buys them.

James C. Van Trees

Jimmy (to you) Van Trees is at least unique among the successful cameramen on the West Coast in that he never objects to a lay-off. (Believe it or not, J. Don Ripley.) The real reason is Jimmy's delightful ranch and mountain lodge high up in the hills on the Sespe River, above the town of Fillmore, seventy-five miles north of Hollywood. We've forgotten whether Jim's ranch is 1,200 or 12,000 acres, but after falling in step with Jimmy for his ideas of a two-hour hike, we're willing to take Hollywood figures and let it go at that. Incidentally, fishing season opening May first has made Jim the most popular guy on the Warner-First National lot. Even supervisors give him the nod.

Glen MacWilliams

One of the oldest (in point of service) of the old-time Fox Cameramen is Glen MacWilliams, who has returned to the Fox Hills plant, where he is photographing Al Santell's production, "Rebecca of Sunnybrook Farm." His second is Joe McDonald. Harry Dawe and Roger Shearman are his assistants.

Bob De Grasse Returns

ANOTHER globe-trotter galloped back to our purple hills this week when Bob De Grasse hopped from the Chief after having spent nine months in England for R. K. O., where he worked as second with Bob Martin. It is fitting and proper that De Grasse should return to the Melrose-Gower lot, where he is now located.

Hal Mohr

Ho-Hum! Life's just one Bennett after another for the cameraman who was the first to shoot actual production scenes with Eastman super-sensitive panchromatic negative. The work of Mr. Mohr has registered in a big international way on the Constance Bennett productions, which he photographed for R. K. O.-Pathe. Now Hal has taken Bill Skall (his man Friday) and his matte box to Fox hills, where he is turning in a sweet symphony of lights and shadows with the other Beautiful Bennett, Joan, who is appearing with Ben Lyon under the direction of Alan Crosland in "Week-Ends Only."

Mike Joyce

Who has been the right hand man of Sol Polito at Warner Brothers for a long, long time, turned in a perfect "take" on St. Patrick's Day, when the stork dropped down with a new cameraman. He carries the tag of Michael Patrick. (May we add our congratulations.)

Karl Freund

Universal's diminutive, under-nourished cinematographer, who works so constantly that he never gets time to eat, is turning in a beautiful production in "Back Street," which is being directed at Universal by John M. Stahl. Assisting Mr. Freund are Freddie Eldridge and Al Jones as seconds and Paul Hill and Ross Hoffman as assistants.

Dev Jennings

Give Warner Brothers a lot of credit. When a cameraman clicks with this outfit he's never forgotten when comes an opportunity to use his services. Newest recruit to the reunion of old-timers at the Burbank lot is Dev Jennings, who is photographing "Competition." His second is Frank Kesson, while Jack Kauffman holds down the spot of assistant.

(NOTE: HALL—I liked that upper corner box in last month's issue with the squib about the cameraman who had been at Roach Studio for ten years. Maybe you'd better put this one in a blue frame.—E. O. B.)

George Schneiderman

Admits he has been with Fox for eighteen years—and he's *still* there and is *not* on the bench. I'd like to see a list of the pictures Schneiderman has made for Fox. See if you can get one. It ought to be plenty interesting.

Teddy Tetzlaff

Columbia is another studio where ability is very definitely appreciated. Teddy Tetzlaff is rounding out his fourth year at the Gower Street plant, where he has turned in some of Columbia's outstanding hits. He is presently photographing "Attorney for the Defense." His second cameraman is Henry Freulich, and his assistants are Jack Anderson and Marcel Grand.

Joe Walker

Another old-timer at the Columbia Studios is Joe Walker, whose photographic achievement on "Dirigible" will be remembered long after the cast of that very excellent picture is forgotten. His present vehicle, "Faith," carries some very unusual shots. Walker's handling of mob scenes is excellent. In this picture he has one sequence where more than a thousand people are used. (And Joe, knowing the peculiar temperament of Sam Briskin, sees to it that every one of those extra checks is accounted for on the screen.)

Benny Kline

Out-of-door pictures are coming back into popularity fast. One of the factors of appeal responsible for this is photography of the class being turned in by Benny Kline, who photographs for Meteor (Irving Briskin) the Tim McCoy and for Columbia the Buck Jones features. Benny accomplishes some thrilling screen effects with his original and daring angles and his always fast moving tempos.

Ernie Palmer

The first time we met Ernie Palmer (which was more years back than we care to admit) he was photographing for John M. Stahl under the production reins of L. B. Mayer at the old Selig Studio on Mission Road. One of those Stahl pictures clicked with one of the big shots at Fox. Immediately afterward Ernie moved over to Western Avenue. His productions with the Fox Company have many times appeared in the year's lists of best pictures. He continues to draw the important assignments, and is one of the most modest and delightful fellows in the business. His second is John Schmitz. Stanlev Little and Dan Anderson are his assistants.

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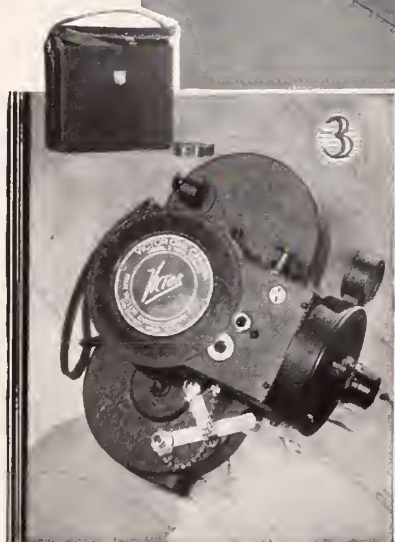
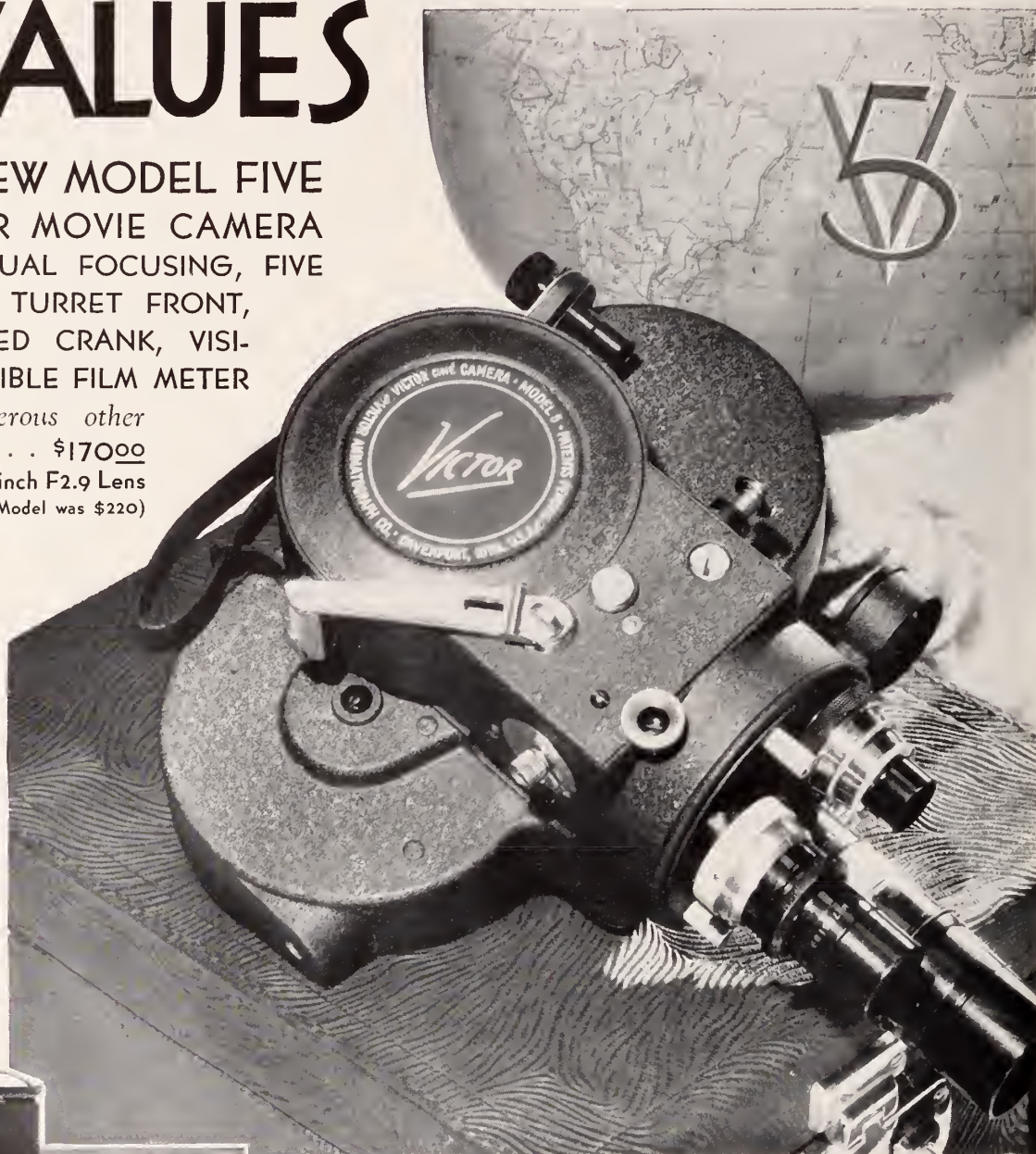
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Volume XIII

JUNE, 1932

Number 2

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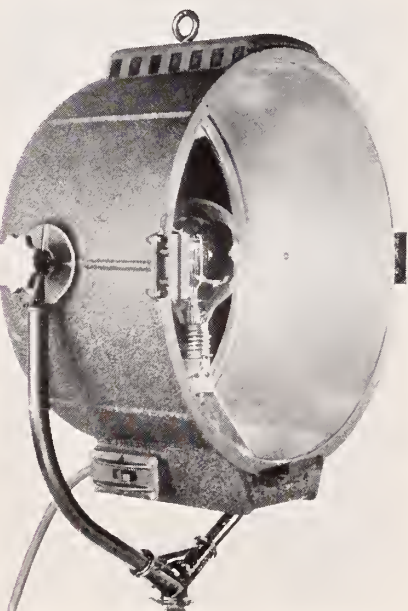
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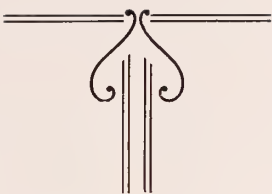
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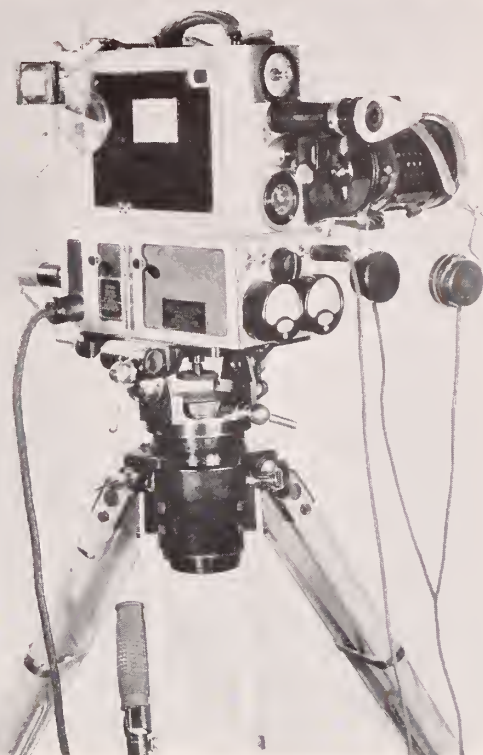
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Period Costumes for Motion Pictures

by **TRAVIS BANTON**

Chief Costume Designer, Paramount Studio

THE greatest difficulty in designing period costumes for motion pictures is not, as might at first be supposed, making them technically accurate, but making them accurate yet not laughable. Technical accuracy is not difficult: there are dozens of authoritative reference works on all periods, from the most remote to the immediate past, in every studio's reference libraries. Furthermore, no designer worthy of the name can help but be intimately familiar with the history of styles. The problem is to incorporate this easily-obtained accuracy with designs that can be worn by the modern woman, and which, when on the screen, will not seem so laughable as to detract attention from the story.

This problem increases directly as the period of the costume approaches the present. If we see a woman in the costume of the Colonial days, we consider her picturesque; if we see one in civil-war crinolines and hoopskirts, she is still picturesque, but just a trifle odd; but if we see one in a bustle, wasp-waisted corsets and leg-of-mutton sleeves, she seems hilariously funny. And yet, every now and then a scenario demands some of these styles for its feminine players.

When such a situation occurs, the costume-designer faces a threefold problem: first, he must make the costumes reasonably—or at least recognizably—accurate; second, he must make them sufficiently modernized to be acceptable to modern audiences; lastly, he must make them to the physical measurements of modern women. The first problem is historical; the second artistic and psychological; and the third purely physical.

As I have said before, the first problem is the easiest. Between the reference resources of a modern studio and the personal research that any good designer must have made in the course of his preparatory studies, there is no purely historical problem extant in period costuming that can give

excuse for a moment's anxiety. For the costumes of the past sixty or seventy years we have an abundance of data, not only in drawings and paintings, but in actual contemporary photographs and fashion-magazines. As we recede into the more remote periods, the data is less detailed, but no less accurate. But most important of all is the individual designer's knowledge of the history of costumes.

Feminine styles move in definite cycles. At first, it is purely utilitarian. Then it becomes more and more ornate, until finally a climax of super-ornamentation is reached, after which there is an abrupt reaction to an exaggerated simplicity, followed by a reversion to the first stage of the cycle. This is frequently—almost invariably, in fact—accompanied by a corresponding cycle of silhouettes, running the gamut from an almost modelled silhouette through a period of gross exaggeration to a reactionary shapelessness.

These cycles are, of course, directly and indirectly influenced by contemporary conditions. A retrospective glance at the fashions of the past two decades will demonstrate this. Immediately before the war we were approaching a period of extreme ornamentation, and exaggeratedly slender silhouettes. The war put an abrupt end to lavish display, and at the same time, through the emancipation of women, necessitated more utilitarian modes. The first few years immediately following the war was, in feminine style as in everything else, a period of abnormal relaxation. Styles became innocuous—almost dowdy. Then came the post-war boom, which, beginning with the exaggeration of the flapper period, built to another peak of lavishness which was interrupted by the present depression. Today the reaction is toward simplicity in design, material, and ornamentation. But—all of the styles since the war have been influenced by the new activities of womenkind; the modern woman is not only ornamental: she works, she hikes, she golfs,



An excellent example of period costuming from "Cimarron"



An 1880 period costume designed by the author for use in "Dr. Jekyll and Mr. Hyde"

she plays tennis, she swims, she rides, she motors, she flies—and as actively as any man. So her clothes must be not alone ornamental, but practical for her new activities. In the same way, though to a lesser extent, period costumes have been modified by local, national and international conditions.

But, although the matter of achieving historical accuracy in period costumes is therefore relatively easy, the matter of making them psychologically acceptable is another—and more difficult—matter. As I pointed out at the beginning of this article, the modes of the more remote periods have a certain quaint charm which makes them seem picturesque and romantic, while the modes that are relatively fresh in our memories (directly or indirectly) appear strange, and in many cases, amusing. I suppose that this is because none of us have seen the more remote ones, while many of us can still remember the more recent ones, and are more conscious of the progress since their day. No one, for instance, has seen a living dinosaur, but many of us can remember pug dogs: the thought of a dinosaur is intriguing—and that of a pug dog, laughable. So it is that in designing period costumes for motion picture purposes the designer must exercise the greatest care to keep the spirit of the relatively recent periods, while carefully avoiding the actual details which would make them laughable, for no costumes must attract interest from the story.

Two pictures which I have recently costumed have presented this problem: "Dr. Jekyll and Mr. Hyde," and "The Strange Case of Clara Deane." The former was laid in the later Victorian period; the latter covered the years between 1912 and

the present. Both were intensely dramatic stories, in which any suggestion of sartorial comedy would have been fatal.

In designing the costumes for "Dr. Jekyll and Mr. Hyde," I was faced with several unusually interesting problems. Rouben Mamoulian, the director, desired the maximum of technical and historical accuracy; yet I dared not make the costumes perfect reproductions of the modes of 1880 for fear of killing the dramatic and emotional values of the beautiful love-scenes between Rose Hobart and Fredric March, and the intense drama of the many powerful scenes played by Miriam Hopkins and Mr. March. Furthermore, the styles of that period favored color combinations, and heavy, broadly-striped fabrics that would have ruined Karl Struss' beautiful photography and compositions. Therefore, I had to compromise somehow. I finally succeeded in evolving designs that were reasonably in keeping with historical accuracy, which satisfied Mr. Mamoulian, Mr. Struss, the ladies in question, and the artistic demands of both good taste and the story. If the various costumes worn by Miss Hobart and Miss Hopkins had been compared in detail with the actual modes of women in the stations of life of the ones they played, many discrepancies would have been noted. In Miss Hobart's costumes, the bustle had been almost completely suppressed, and the bulging sleeves only suggested. The bustle was hinted at by a certain fullness behind, and by ruffles and bows. The same is true of the leg-of-mutton sleeves. Miss Hopkins' part, one will recall, was of a music-hall person who was distinctly not a lady. Her costumes had to show it; therefore they were made considerably more daring and immodest than would be historically accurate. There was, to be

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Two period designs. Left, 1912; right 1880

The Relative Values of Sound and Color

In Motion Pictures

by **DR. L. M. DIETERICH, A.S.C.**

Consulting Engineer

THE efforts of creating motion pictures, to faithfully reproduce natural vision within the limits of present methods of screen projection, are in the direction of combining sound with color.

Sound reproduction, restricted by the even ultimate possibilities of at present known methods, so far renders in its best results fairly satisfactory results.

Color reproduction up to the present has not reached even this stage of development, mainly for the reason, that the fundamental conceptions of so far known "color schemes" are, even in their ultimate possibilities, inadequate to achieve satisfactory results.

Assuming, however, that both sound and color reproductions would develop each by itself, to a condition of faithful imitation of nature, then the synaesthetic properties of human sense reaction should be well considered.

Synaesthesia in its broad sense means the automatic exciting of a sense organ by the functioning of another sense organ.

This automatic reaction is a combination of physiological and psychological phenomena.

To the knowledge of the author, synaesthesia has, as far as sound and color are concerned, in the arts, and certainly in the motion picture art, never been the basis of profound study or systematic application or use.

And yet, wherever outstanding impressive harmonies of sound and color were produced, either accidentally or by the unconscious "genius" of the human creator, then synaesthesia was active.

Before this constant repetition of that mysterious word synaesthesia, however, produces any anaesthesia in the reader, it might be well to try to clarify its practical characteristics, at least as far as sound and color are concerned and then suggest a method of application to motion pictures.

It is well known that musical arts, the sound qualities of human speech, as well as the color arts, have a decided emotional effect.

Interest, pleasure or displeasure, fascination, delight, love in its platonic or sexual beauty, or perversity—the whole gamut of emotional reactions are influenced by both sound and color.

The same effects of sense pleasure or displeasure have been and are continuously felt by all of us even under the simple conditions of looking into a store show window or listening to the radio, and in a more sophisticated endeavor, by visiting a museum of the fine arts or attending a philharmonic orchestra concert.

One of the most convincing demonstrations of the synaesthetic relationship between sound and color is the combination of a color organ display with accompanying music.

It produces an uncanny, mysterious sequence of sense emotions and can sway the mind of the audience to practically any height or depth of emotion, desired by performers of skill and thorough knowledge of psychological reactions.

It may at this point be mentioned that the comparative study of the sensitivity curves of both the human eye and ear are of great assistance in the valuation of sound and color synaesthesia, keeping in mind the influence of intensity upon the acoustic sensitivity curve under the usual rapid fluctuations of intensity in music.

Let us assume that we realize these existing and active sense reactions, then we should analyze both such sound and color

reactions in order to be able to harmoniously combine them or choose the then known characteristics of one sense impression to properly co-act with certain characteristics of the impression upon the other sense, in order to enhance and not to diminish or destroy the desired effect.

It is well known, for example, that the "brilliant" hues of the warm color scale, like yellow and red, are entirely in harmony with "brilliant" martial music of strident tones and that the soothing effect of deep greens and blue-greens of the cold color scale blend well with a languid serenade. A funeral march and a gay beach scene, however, would certainly not be a pleasant combination of sense reactions, whatever the inherent beauty of either one may be.

Let us consider, as a supposition, a motion picture scene with sound and color, wherein a wharf scene is shown and wherein the dramatics call, as a pictorial detail, for an outstanding effect for a red roof and as a sound detail for the voice of a female street singer, a supposedly so far undiscovered marvelous soprano.

The art director, well versed in color effects, will, of course, make the selection of the red hue of the roof in accordance with its structure, a tile roof rather than a shingle roof for brilliance effect and select the contrast reaction of the values of surrounding objects as near as possible of complementary colors to produce the final effect of outstanding attraction concentrated upon this roof detail. This art, in short, produces in the spectator the desired dramatic effect the author strives for. This is, however, the total effect of the silent picture only.

If at the start of this crowded wharf scene an accumulation of discordant noises, with the synaesthetic impression of foul smells and dirt, impress themselves upon the spectator, the brilliance of the red roof has materially declined.

An organ grinder appears on the scene and the listener hears and is attracted by a pleasing, lively tune. The red roof immediately appears to be of a brighter hue. The street singer, clad in lively colors, starts to sing. She sings a passionate love song, supported by a marvelous voice. The red roof now appears with the same dramatic brilliance which the author and supporting art director are striving for and this brilliant effect reacts vice versa synaesthetically upon the dramatic effect of this love song and enhances the beauty effect and dramatic value of the singer's voice.

If the composer or music director, however, would be convinced that the specific star singer's voice would, in itself, be most effective in a character song of ribald drunkenness, including contrast disharmonies—the singer might be most impressive in herself—but the red of the roof would lose its brilliance, its dramatic effect would decline and, vice versa, take the snap out of the singer's voice.

If such a song, however, is a necessity, as well as the brilliance of the roof, then both effects must beforehand be stepped up in order to maintain the final cooperative dramatic effect of these two sense impressions of both sound and color.

These considerations are well in line with the dramatic art employed in properly harmonizing music and song with the libretto, scenery, and acting ability of the performers of, as an example, grand opera, but have so far been woefully neglected in the composition of colored sound motion pictures.

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Tinted Stock for Better Pictures

by **VICTOR MILNER, A.S.C.**

IN THE making of dramatic films, as opposed to newsreel and commercial subjects, the cinematographer finds himself dealing not so much in portraying scenes with photographic accuracy as in photographing thoughts—dramatic and emotional ideas—by means of which a story is told. To do this successfully, every possible means—mechanical, artistic and psychological—must be employed. The mechanical and artistic expedients are well known, and constantly employed by all of the leading cinematographers, directors and producing organizations; but the psychological factors are neither so well understood nor so consistently employed. This is more than merely unfortunate—it is catastrophic, for the motion picture, being essentially dependent upon emotional appeal, must necessarily depend greatly upon the application of every possible psychological trick by its makers.

One of the greatest of these psychological aids to building up emotional response is the use of color. During the decades in which the motion picture made its great development as an artistic form, a definite use was made of this, by means of tinted-base positive stock, and a definite series of emotional responses to color were established in the minds of audiences the world over. With the coming of sound, all this was swept away. The recording engineers, with their then imperfect recording and reproducing equipment and technique, found themselves handicapped by the technical limitations that the tinted positive film imposed upon them. But today, these limitations no longer exist. Tints have been evolved which do not materially reduce the efficiency of the photoelectric cell; moreover, both recording and reproducing equipment and practice have improved to a point very closely approaching technical perfection—certainly to a point at which any slight loss due to the use of tinted positive is unnoticeable.

What, then, is keeping us from once more using this provedly potent aid to the emotional phases of our pictures? Two things: the inertia inherent in the purely technical minds of our sound-departments, and a surprising lethargy on the part of the cinematographers and directors whose business it should be to insist on the employment of every possible aid to better pictures.

Fortunately, it has been my good fortune to be associated on my last two pictures with directors who understood the value of tinted film in enhancing the pictorial and emotional appeal of their productions. Therefore, in each case the director and cinematographer have presented a united front in demanding that certain portions of the production be made on tinted-base positive—and in each case, the results have more than justified the move. The quality of the sound was in no case injured; in fact, I have been told by disinterested observers that the sound in the tinted sequences was markedly superior in quality to that of the untinted ones. And the emotional appeal of the scenes was immeasurably enhanced. In a recent production from another studio, which I viewed lately, ("The Crowd Roars"), one of the most important sequences was made entirely on tinted stock ("Inferno"), with the result that the sequence was far more impressive and moving than could have been possible otherwise.

Thirty years of making moving pictures have given us at least a partial understanding of the emotional value of color, and have moreover educated the picture-going public to a definite response to certain uses of color. But the emotional response to color is of even longer standing than the com-

paratively short history of the cinema. As Dr. Loyd A. Jones, A.S.C., wrote some time ago, "The literature pertaining to the language, symbolism, and emotional effects of color . . . extends over the entire period of recorded history. Mythology is replete with the symbolism of color. On the Greek stage the colors of the costumes were adjusted to the mood of the action. Color is intimately associated with the entire history of the Christian Church, and a very definite symbolism of color has been developed. Color has been so inseparably linked with sensory experience throughout the evolution of mankind that it has acquired by objective and subjective association definite and important emotional value." Dr. Jones further quotes Opie, an English artist of the 18th century: "Every passion and affection of the mind has its appropriate tint; and coloring, if properly adapted, lends its aid, with powerful effect, in the . . . forcible expression of them: it heightens joy, warms love, inflames anger, deepens sadness, and adds coldness to the cheek of death itself."

Like all psychological factors that appeal to the subjective rather than the objective, color-reactions are somewhat stylized: they deal more with the sensation evoked in consciousness than with color as it actually is. In the use of tinted-base film for motion pictures, this must always be kept in mind. The correct tint to use for any given scene or sequence must be determined not alone by the actual coloration of the setting, but by the color-associations known to exist in the audience's mind. For instance, a scene printed on green stock is objectively correct for forest and garden scenes; but subjectively, the green connotes springtime—youth, freshness, hope, and aspiration, and may be used with such scenes, whether they be exteriors or interiors.

Similarly, sunlight is definitely suggested by certain shades of yellow, even though sunlight is, by actual spectroscopic test, not yellow, but white. Therefore, exterior scenes, or interior scenes with definite source-lightings suggesting sunlight streaming through windows, are highly effective when printed on yellow-base stock. Night interiors in which the idea of artificial rather than natural light is well established are more effective when printed on a more pronouncedly yellow-orange tinted stock (especially that trade-named "Candleflame"). Firelight may be suggested by a still more reddish tint, and actual flames by a frankly red stock. Night exteriors, whether made at night or by day, or whether they suggest moonlight or artificial illumination, are traditionally the most effective when printed on blue-tinted film. Ocean and water scenes are rendered "wetter" by the use of certain shades of blue-green. Purely scenic shots, especially of desert and cloud effects are, strangely enough, greatly enhanced by the use of certain pink and lavender shades. These examples could be extended to an almost infinite length, but the few given here should suggest the others.

Of even greater importance is the fact that colors bring very definite emotional responses. Some colors excite, some tranquilize, and some subdue. The responses of a group of observers to these phases have been classified by Wells in the following table, which merits careful study by all directors and cinematographers:

Total number of replies from 63 subjects indicating three general types of mood-reactions due to the twelve different colors.

(Continued on Page 28)

Engineering Aspects of Noise Studies

by **S. K. WOLF**

Director, Acoustic Consulting Service, Electrical Research Products Inc.

BECAUSE of the intimate relation between noise and movement the machine age, in addition to major sociological and economic changes, is characterized by an amount of noise new in human experience. This is especially evident in the present motor age where our urban life with its strident, insistent hurry has noise as a predominating feature. It is also true of our factories; the impressionistic representations of industrial scenes of new thought painters should have their counterpart in weird synthetic sound patterns symbolic of the "hum of industry." A sensitive person viewing our civilization might be led to conclude that there exists a squalor of noises in a world of mechanical splendors.

Within the past few years there have appeared signs of awakening consciousness. The first eager acceptance of mechanical appliances has been tempered by a demand for silent operation in a public reaction that has been reflected in engineering circles. The engineering version of this reaction is that with which I shall be concerned here. Because of it, such typical branches of engineering as civil, mechanical and communication have had to turn their thoughts to a new field which may be called noise engineering.

Noise engineering has to do with noise in all its phases: generation, transmission, effects on mechanical and human equipment, measurement, analysis, and suppression. It is both preventive and curative in its practice, the ultimate purpose being the elimination of all harmful noise and vibration. Some of the high lights of this new field will be discussed here.

Noise we define as any undesired sound. This definition emphasizes the psychological rather than the purely physical aspects and correctly so. The physical properties of noise and music tones are very much the same in regard to measurement, transmission and absorption, hence distinction cannot be made too sharply.

Since we are concerned with the human elements in noise reduction work, it is necessary to examine briefly psychological and physiological effects of sounds. Subjective auditory response to sound stimuli is logarithmic in character, i.e., the Weber-Fechner law of sensation which applies to the other senses is true for hearing also. There is some deviation from the logarithmic relation especially at the higher and lower frequencies as the hearing mechanism is non-linear with intensity. It is also non-linear with frequency. The ear is a great deal more sensitive to low intensities from 1000 to 4000 cycles than it is at others. As the intensity is increased, the response with frequency becomes more uniform.

In addition to auditory sensation, noise also produces other less tangible effects. There are psychological elements like annoyance and mental fatigue; e. g., it is thought that pure tones of high frequency are more annoying than pure tones of low frequency of equal loudness. Recent investigations have shown harmful physiological effects of noise on brain pressure, digestive system, body recovery during sleep, etc. These consequences cannot be elaborated upon here but the noise engineer must be familiar with them in order to determine what characteristics of undesired sounds require the most immediate attention.

Noise studies proceed most rapidly when measurement of noise is feasible. Sound meters are invaluable in eliminating the human element and furnishing reliable data concerning the composition and magnitude of noise. Several types of instruments with novel design features have been devised and they shall be briefly mentioned here. The intensity may be

measured either in dynes, or the logarithmic unit, borrowed from the transmission engineer, the decibel.

A comparatively simple meter is one designed to measure acoustic power directly. This type is not common inasmuch as usually we are concerned with the sensation value of a sound. A more common sound meter has a frequency weighting characteristic similar to the loudness level curve at 40 db. To simulate the ballistic characteristic of hearing it is designed to give maximum response only for sounds of more than a fifth of a second duration. The maximum intensity for which it will function is about 500,000,000 times the minimum, an enormous range for an instrument, but not so great as our ears can accommodate. The ideal for this type of meter, complete correspondence between its readings and the response of the average human ear is far from realization. Nevertheless the instrument is most valuable in engineering studies on noise and noise reduction.

Another type of instrument is the harmonic analyzer. Applied to noise the name is something of a misnomer for the meter will indicate components having no harmonic relation to each other. Such analysis is desirable to aid in locating the sources of troublesome components. The analysis may be broad, i. e., the entire acoustic spectrum may be divided into 3 or 4 parts; or separation between components relatively few cycles apart may be had. One type harmonic analyzer is based on the heterodyne principle in order to secure uniform and high selectivity, with electrically resonant detector circuit. It is interesting to note that today mechanically resonant elements are sometimes employed in place of electrical circuits in such analyzers.

Since noise in modern life is, in one sense, largely due to the engineer, it seems fitting that the engineer should now concern himself with ameliorating existing conditions. The program adopted by the noise engineer to war on noise may be classified into fields related to the several branches of engineering. The first principle of the noise engineer, avoidance of its generation, is highly applicable in other fields, mechanical engineering being the most prominent. If our machines can be made silent in operation, the first great step forward will be realized. Factories, offices and homes even can be quietly peaceful compared to present conditions. The transportation fields offer great possibilities in this respect. Automobiles, subways, trolleys and aeroplanes are all noisy but are all undergoing study and improvement. The second principle of the noise engineers to avoid sound and vibration transmission, is obviously important to the construction man and also to the mechanical engineer. It is the duty of architects and builders to supply substantial sound-proof buildings. To keep out noise, homes of the future may employ windows for light and observation only, air being obtained through auxiliary, sound-proof inlets. The third principle, to absorb sound, has its application after other principles have been tried. The ventilating expert uses it to produce silent ventilating ducts and window attachments, and there are other similar uses for diminishing the intensity and sensation value of noise.

How is the above program being carried out at the present time?

I feel that I am not being too optimistic when I say that progress is being made all along the line. Automotive engineers are giving us the silent second and vibrationless motors and motor suspensions. Recently in New York City

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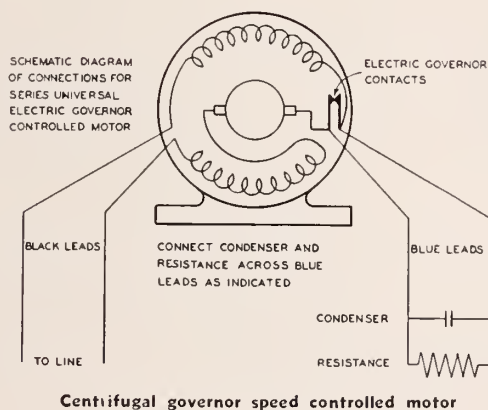
Speed Control

by E. H. HANSEN

THE problem of running separate mechanical devices synchronously has been one of the earliest, since the combining of electro-mechanical arts. In the entertainment field, the introduction of talking pictures brought out the necessity of synchronizing camera and sound recorder operation.

The attempt by Edison, in 1904, of course, lacked primarily the thermionic amplifier, for suitable reproduction. The belting and flexible shaft arrangement of Edison, between the projection booth and the mechanical reproducer on the stage, automatically took care of synchronization, despite the physical difficulties incurred. In production, Edison, of course, used a similar mechanical arrangement in connecting the picture camera and the wax recording machine.

Synchronous motors have been utilized for synchronous driving since the beginning of alternating current power systems, and like many other fields of endeavor, the talking picture has adopted, to a great extent, this elemental method. The simplicity of merely connecting two synchronous motors across a common source of power supply is very appealing, were it not for the fact that it does not answer the problem of electrically inter-locking camera motor systems, so that they may be brought from a standing start to full speed, and then stopped in interlock. The interlock motor control system has application, not only to production recording, but also in dubbing, re-recording, and scoring. In many of our studios today, it is no uncommon practice to find from six to eight projection machines, re-recording machines, and sound recorders, electrically interlocked. Mechanical attempts to place various machines on a common shaft, or by means of jack shafts and chain drives, have not met with approval, due to the lack of flexibility, and the physical difficulty inherent when machines are widely spaced.

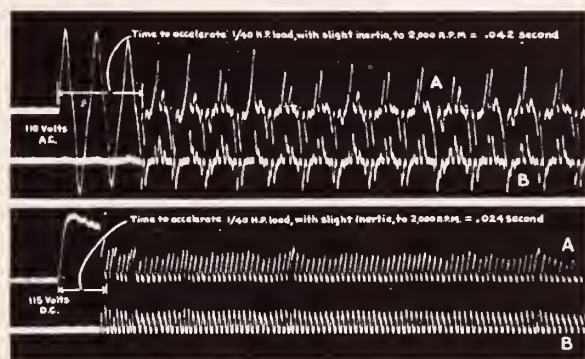


Centrifugal governor speed controlled motor

Some of the early applications of the electric interlock, or Selsyn motor, was in the driving of steel mill equipment, the gate motors of the Panama Canal, and Directorscope fire control systems on board our battleships. These systems are identical to the Selsyn motors used in studio production, except for the increased power output.

In sound recording, the addition of a speed control unit to the master motor of a Selsyn system was to be expected. The necessity of maintaining not only good motion in a projector or sound recorder, but also controlling its speed, so that a standard could be maintained, was apparent from the beginning. As late as 1927, different film speeds were employed

by the major talking picture producers of that time. The De-Forest system operated at eighty feet per minute. The Fox Movietone system operated at eighty-five. The Warner Brothers disc was geared to the film, so that thirty three and one third R.P.M. was obtained when the film was passing through the aperture, at ninety feet per minute. A consolidation finally provided a standard film speed of ninety feet per minute, or twenty-four frames per second. Early sound on film talking picture production utilized equipment similar to that now used by the newsreels, namely, the sound was recorded in the picture camera, and required simultaneous processing. The drawbacks of this simplified system are well known, and it was soon apparent that the advantages of double system recording would ensure the adoption of this method. Both the Selsyn and synchronous motors were quickly adopted. In the case of the synchronous motor, the ratio of gearing, and the consistency of frequency of the power supply circuit, was depended upon for speed control.



Performance curve of centrifugal governor type motors

In conjunction with the Selsyn drive, there was brought out at this time a method of DC speed control, which would control a master DC motor driving the master Selsyn motor, and a very high degree of speed regulation was provided. This was called the tuned control method, and employed an alternator on the common shaft with the master Selsyn motor, which supplied an alternating current of 720 cycles, which was fed into a filter rectifier system, so that during periods of the control motor slowing down, less field current was applied, and during overspeed periods, a greater field current was introduced into the control field windings of the control motor. This system depended only upon the accuracy of the filter cut-off, and has proven to be one of great stability, despite a rather complicated and bulky electrical arrangement.

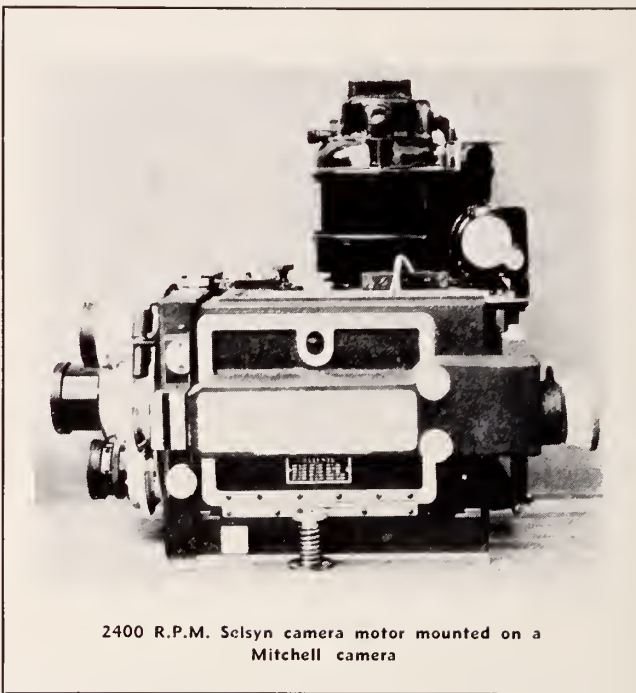
During the past two years, a very light weight synchronous control method has been developed. This is known as the DC interlock method, wherein a DC motor and AC generator are combined on one shaft, so that with the AC windings of independent motors interconnected, they will run in synchronism. These motors, however, usually do not have any speed control method, other than a field rheostat controlling the shunt field windings of the DC motor. The AC windings do not become energized until they attain nearly normal speed, so that the interlock feature is only effective after all motors are running at nearly normal speed. This type of interlock system is much more efficient, from a power consumption standpoint, than the

true AC synchronous methods, and the drive motors for the various photographic, or recording, units, may be operated on dry cells of the "B" battery type, providing an extremely flexible power supply.

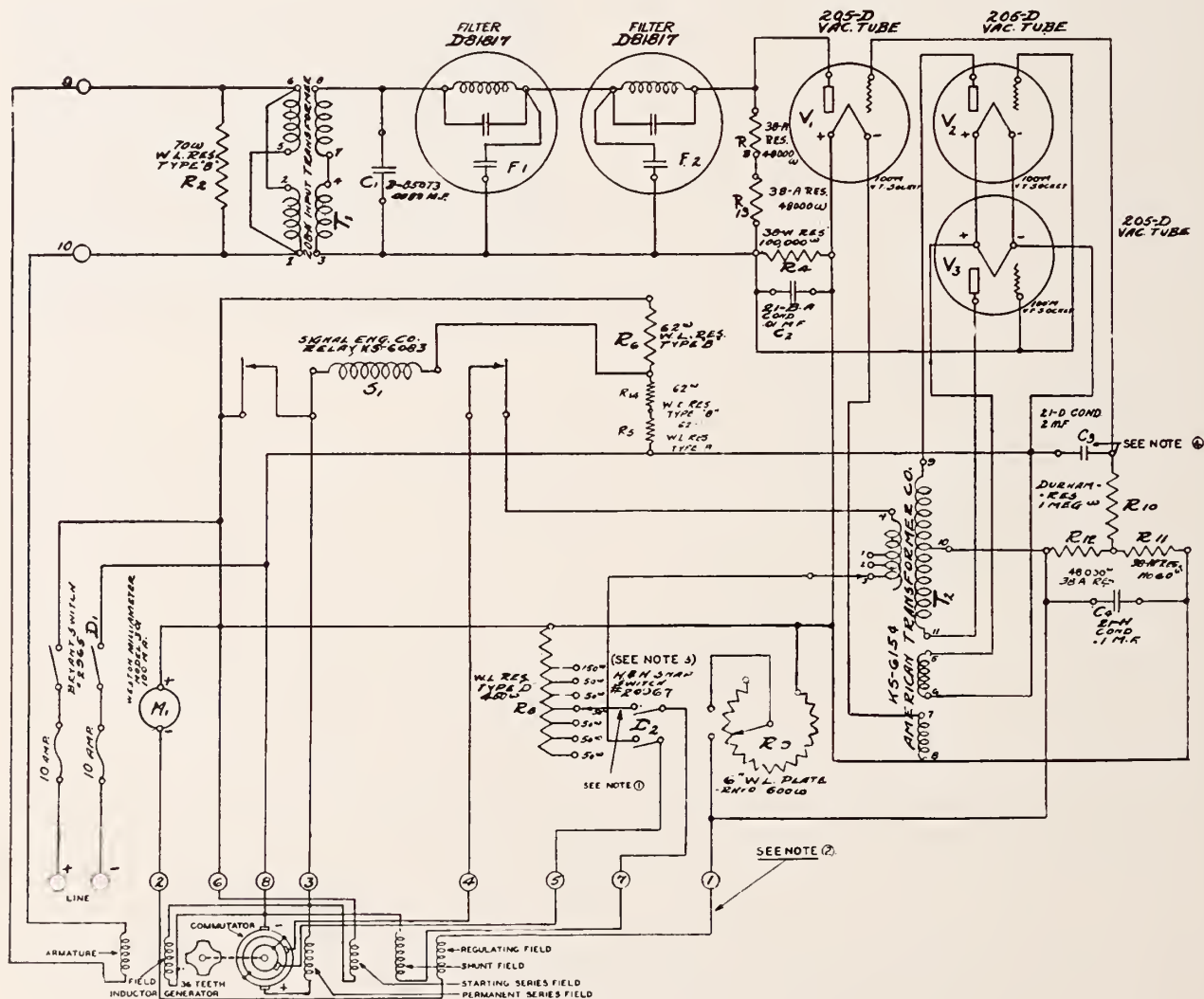
AC and DC motors have been available for many years, incorporating a centrifugal switch on the shafts, cutting in and out a series, or field resistance, by the governor action. With careful regulation a fair amount of speed control is obtainable by this method. It will be apparent, however, that the control action does not operate until the motor speed has reached critical points at top and bottom. The result is that if carefully analyzed, it will be found that the speed characteristic chart comprises a continuous cycle of peaks and valleys, with the motor at no time remaining in mid-portion. The main drawback to governor control DC motors lies in the response time period.

A more constant and accurate means of controlling motors, either for DC interlock, or DC master control methods, is that of an additional field winding, having its current controlled by means of a tuning fork. Current is supplied to this control field winding through a commutator, which, if out of phase with the tuning fork, makes no contact, and permits the motor to speed up. Upon speeding up and coming into phase, a commutator contact is made, and a small amount of controlled field current is applied, holding the motor to a slightly slower speed. It is necessary, in the primary adjustment, to set the regular

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2400 R.P.M. Selsyn camera motor mounted on a Mitchell camera



Schematic drawing of tuned control speed regulation circuit

Size of Image

As a Guide to Depth of Focus in Cinematography

by J. F. WESTERBERG, A.S.C.

N. A. C. Hardy's paper on "The Depth of Field of Camera Lenses," which appeared in the S.M.P.E. Journal of March, 1931, several questions were brought up that merit discussion from the point of view of practical cinematography.

The common misunderstanding in regard to the terms "depth of focus" and "depth of field" was mentioned, and also the question of whether in motion picture photography the size of the permissible circle of confusion should vary or remain constant. The most significant point that was brought up, however, was the relation of magnification to depth. The simple rule, that depth varies inversely as the square of the magnification, may prove to be a very practical yardstick in the appraisal of depth in photographing near-by objects. In the past, too many factors have been involved to warrant any other method than direct visual examination of the image on the ground glass.

Depth of Focus Vs. Depth of Field

It is common practice among photographers to refer to all problems of depth by the expression "depth of focus." Strictly speaking, depth of focus should only be used in referring to the leeway that one has in focusing upon an object at a fixed distance. Thus, under certain conditions, if it is desired to focus at 15 feet, a satisfactory image may be obtained of an object at that distance if the point of sharp focus falls anywhere between 13 and 18 feet.

Depth of field, on the other hand, assumes that the lens has been focused correctly at the desired distance, in this case 15 feet, and indicates that all objects between 13 and 18 feet would be in practical focus.

It is doubtful if in most cases cameramen actually adjust to the exact focus, especially when following focus. Depth of focus is, therefore, an ever-present life-saver. When attempting to focus so that objects both near and far shall seem sharp, it would be technically exact to say that depth of field is under consideration, although practically it is much simpler to retain the term depth of focus in an all-inclusive sense.

Fixed Circle of Confusion

It is well known that in still photography a larger circle of confusion can be tolerated when the picture is big and the lens of long focal length than when the picture is small and the lens of short focal length. Big pictures are usually looked at from a distance, while small pictures have to be examined close at hand. It is assumed, therefore, that in still photography the size of the permissible circle of confusion may vary directly as the focal length. A value of $1/1000$ th of the focal length is the accepted figure. This works out, for example, as $1/100$ th an inch for a ten-inch lens and $1/250$ th an inch for a four-inch lens.

Can this line of reasoning be followed in the case of a motion picture? Apparently not, because the size of the picture and the viewing distance are constant for any one spectator. The fact that the faces on the screen vary in size is evidently immaterial in this case.

The result of allowing a sliding scale is quite apparent to the eye when looking through a camera. The longer focal lengths, on the one hand, do not live up to their higher rating and the wide angle lenses, on the other hand, have depth to spare. A fixed circle of confusion of $1/500$ th an inch seems to be about correct in practice. This is $1/1000$ th of the focal length of a two-inch lens.

Size of Image A Measure of Depth Capacity

Hardy's proposal to consider depth as a function of the magnification has practical possibilities that should not be ignored. Nearly all the scenes in a motion picture are made at close range, somewhere between a full-length figure and a close-up. The subject of depth becomes greatly simplified when we consider, for instance, that the depth in photographing a waist figure is always practically the same for any given stop, regardless of the focal length of the lens used. With this in mind it becomes possible to construct a table in which any reference to focal length or distance of object becomes superfluous. This simplifies matters considerably. All that remains to consider is the stop and the magnification. The stops are easily read, of course, and the magnification can be readily estimated with sufficient accuracy by reference to the ground glass.

Relation of Depth to Magnification in Motion Picture Lenses

Image Data			Total Depth				
Based on aperture 0.6×0.8 of an inch			At least one-half of total depth available beyond plane of critical focus				
Magnification	Height of Subject at Point of Focus Included	Character of Scene	F/2	F/2.8	F/4	F/5.6	F/8
1/11.2	6.7 in.	Insert of hands	1.0 in.	1.4 in.	2.0 in.	2.8 in.	4.0 in.
1/15.6	9.4 in.	Action insert	2.0 in.	2.8 in.	4.0 in.	5.6 in.	8.0 in.
1/22.4	13.4 in.	Large head	4.0 in.	5.6 in.	8.0 in.	11.0 in.	16.0 in.
1/38.7	23.2 in.	Close-up	1.0 ft.	1.4 ft.	2.0 ft.	2.8 ft.	4.0 ft.
1/46	27.6 in.	Bust	1.4 ft.	2.0 ft.	2.8 ft.	4.0 ft.	5.6 ft.
1/55	2 ft. 9 in.	Waist figure	2.0 ft.	2.8 ft.	4.0 ft.	5.6 ft.	8.0 ft.
1/65.5	3 ft. 3 in.	Cutting at hips	2.8 ft.	4.0 ft.	5.6 ft.	8.0 ft.	11 ft.
1/77.5	3 ft. 10 in.	Hands showing	4.0 ft.	5.6 ft.	8.0 ft.	11 ft.	16 ft.
1/90.7	4 ft. 6 in.	Cutting at knees	5.6 ft.	8.0 ft.	11 ft.	16 ft.	22 ft.
1/110	5 ft. 6 in.	Cutting at ankles	8 ft.	11 ft.	16 ft.	22 ft.	32 ft.
1/130	6 ft. 6 in.	Full length	11 ft.	16 ft.	22 ft.	32 ft.	45 ft.
1/155	7 ft. 9 in.	Medium long shot	16 ft.	22 ft.	32 ft.	45 ft.	64 ft.

The above table illustrates the simplicity of this method when used for motion picture work. Purely minor variations such as the effect of distance on the $f/$ value have been completely ignored. It is hoped in this way to make the table simple enough to be of some practical use in production. A table of this sort should prove useful in many ways.

(1) It indicates at a glance the capacity in regard to depth of any particular set-up.

(2) It indicates to what extent stopping down the lens will improve depth.

(3) It indicates to what extent a larger stop is justified under any given circumstances.

A table like this, based on magnification of the image, should make it possible for any one to obtain an accurate yet simple grasp of the depth situation in photographing near-by objects with a motion picture camera, and to know, without difficulty, how much depth can be relied upon and utilized in any given case.

(This paper was read before the S.M.P.E. Fall meeting and appeared in the Society's Journal—Editor.)

New Perambulator and Camera

Features at Academy Technicians' Meeting

UNDER the chairmanship of Virgil Miller, the newly-formed photographic section of the Technicians' branch of the Academy of Motion Picture Arts and Sciences recently held an interesting meeting and exhibition of new cinematography at the Paramount Studio. Quite a variety of new and recently-developed apparatus was on exhibition, and each was briefly explained during the meeting by its maker. Undoubtedly, the main centers of attraction were the new Bell & Howell perambulator (unofficially christened the "Rollambulator" during the course of the evening), the new Fried "Photo-Effect Camera," and the new Tally camera, described in detail in a recent issue of "THE AMERICAN CINEMATOGRAPHER." Other devices shown included blimps, tripods and cranes developed by and now in use in various studios, new lenses, etc.

The new "Rollambulator" is one of the most practical devices yet introduced for the prevalent moving-camera technique. In addition to the usual pan-and-tilt movements, and the horizontal movement provided by its wheeled construction, there is also a vertical movement which enables the camera to be raised or lowered from a lens-position approximately 24 inches from the ground to nearly eight feet. The perambulator movement is hand-powered, and on small, rubber-tired wheels. The pan-and tilt movements are manual, and controlled by a posi-

tive and silent hydraulic resistance. The vertical movement on the present model is by a vertical worm, which may be cranked by an assistant, with the crank placed either by the camera-head or on the base of the perambulator; in either position, this crank positively locks out the other crank. An hydraulic hoist is contemplated for the vertical movement of future models. The panoramic movement is, as has been said, hydraulically controlled, and is normally operated by the feet of the cinematographer, who sits on a seat mounted so as to revolve with the camera, and pushes with his feet upon a convenient, circular track on the base of the device. The tilt is controlled by a lever that is placed convenient to the cinematographer's hand. The "Rollambulator" has been, we understand, developed primarily for use with the silent camera which its makers are developing, but it is sufficiently strong to accommodate the heaviest and bulkiest blimps now in use.

The Fried "Photo-Effect" camera is one of the most unusual devices thus far developed. Briefly, it consists of two Bell & Howell cameras, mounted directly above each other, and connected by a bellows. The film passes through this bellows, and is exposed in both cameras. The two cameras may be panned and tilted separately, and the images may be focused singly or together, by means of a unique duplex focusing tube, by which the two images may be brought into exact register. According to Armin Fried, its designer, this camera is intended to supplement process shots, enabling the cameraman to achieve these effects at a single exposure, with the minimum of time and effort expended. In practice, the lower camera is used to photograph the foreground action, and the upper one to photograph the background. Different focal-length lenses may be used, and the background may be either a straight or

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The new Bell & Howell perambulator

Sound Recording: Art or Trade

by **L. E. CLARK**

NEARLY three years ago, during the course of the series of lectures on Sound Recording given by the Academy of Motion Picture Arts and Sciences, I said, "With such an imposing array of reasons why motion pictures are hard to make, one can but wonder at the future of the sound picture, and particularly at the future of the engineer who was thrown into the motion picture business as a result of sound. If the motion picture is going to continue to live, it must be as an art and not as a science, and accordingly the engineer must become something of an artist. It will be with sound as it was with photography. Cameramen have their individual peculiarities. There are certain men who excel in the art of photographing certain stars, and there are other men who confine their particular attention to action photography or to scenic photography. Each man has his own particular set of equipment for his camera—special filters, special lenses, diffusion discs and related devices. The future sound engineer will do likewise. He will have his special circuits, his special frequency characteristics, let us say, with which he can improve the voice of an actor far beyond its natural state. Certain of the mixers will excel in closeup sound, certain others will excel in other branches. One possibly may become an expert in recording exteriors. And so it goes. Sound recording will soon become more and more of an art, and less and less of a merely technical operation."

Since then, time has proven me wrong. Instead of becoming more and more of an art, sound recording has become more and more of a routine, technical job. Artistry has been lost in a maze of decibels. The sound man, as an individual, is scarcely more important than the gaffer, the grips, the projection-machine operator, or the extra players that dress the set. All that is asked of a sound man is that he be able to run the sound equipment passably, and get along with the director and cameraman. Whether he is an artist or a mere dial-twister does not matter particularly.

A very concrete proof of the status of the sound man is the fact that in all but one or two studios the individual soundman who records a picture does not get screen credit. When screen credit for recording is given, it goes to the department head instead. This is in direct contradiction to both studio practice and common fair play. In other departments of production, screen credit is given to the men actually responsible for the work. Cinematography is not credited to the director, nor is direction credited to the producer. The head of the camera department is not given credit for photographing the productions photographed by his subordinates, nor is the head of the story department credited with writing the stories upon which he passes. Therefore, it is unreasonable to bestow the credit for recording a picture to another than the man who actually does so. But there is still another reason for giving the individual recordist the credit that is his due: the personal incentive that such screen credit will give him—arousing in him a new, personal interest in his work—an earnest desire to do his work better, to prove his individual technical and artistic worth to his superiors, his fellows, and the world at large.

But, after all, this situation is directly the fault of the sound men, individually and collectively. Our work is scarcely less important, and demands no smaller combination of technique and artistry than that of the director and cinematographer. But we have deliberately allowed the industry as a whole to overlook the individual and artistic sides of our contributions, and relegate us to the status of ordinary, skilled workmen.

The cause of this goes back to our entrance into the motion picture industry. Very few of us were originally from the studios; we came from the electrical laboratories, from the telephone companies, from radio broadcasting studios and chains, and from engineering colleges. We knew little or nothing of conditions within the motion picture industry—and cared little about them. We were engineers—and proud of it. Our business was to install and operate the recording equipment, not to make pictures per se. We were not particularly concerned with the artistic phases of picture-making, either immediate or potential. We were not interested, either, in the rewards (other than financial) of motion picture making. Our job was to install the recording systems in the studios, to overcome the technical problems incident to making talking pictures. How well we overcame them is attested by the present-day activities of every studio; but we are now paying the price of our initial attitude. We came into an artistic business, to work among artists—but we ignored the innumerable signs that clearly told us that we, too, must become artists. We were scientists—and scientists we would stay. Art had no part in science, so we shut our ears to its possibilities and invitations. We ignored the fact that we had left the laboratory, not for the routine technical job of installing and operating telephone circuits, but for the infinitely complex and potentially artistic task of creating by means of modified telephone circuits the audible part of the most imaginative entertainment the world has ever known.

Today we are paying the piper. We are still sound technicians, it is true; but we are regarded as only technicians—not as artists. We record what is played beneath our microphones—and are satisfied. We seldom, if ever, think of suggesting ideas for the artistic betterment of either sound-recording or its dramatic utilization. We are technicians! Who expects us to have any ideas on art?

And yet, every day when we go on the set, we are faced with the embarrassing spectacle of a technician who is also an artist, and recognized as such: the cameraman. He is a technician to his finger-tips; his work is no less technical and scientific than is ours. He must know photography, photochemistry, photographic optics and mechanics and the physics of light-waves just as we must know electricity, transmission circuits, recording practice and the physics of sound-waves. He must be a super-skilled technician, for his work is exacting, and allows even less after-control and modification than does ours. But—in addition to being a technician, he is an artist. He is keenly alive to the artistic possibilities of cinematography. He studies each scene—each sequence, not alone as a routine problem in photographic technique, but as an individual problem in cinematic art. When he sets up his camera and arranges his lights, he does so not merely so as to make an exposure possible, but to bring out in the most effective manner the qualities of the set, the players and the action in the particular dramatic mood set up by the story requirements.

In doing this, a good cameraman invariably does many things not included in the ordinary requirements of strictly technical photography. He will overlight or underlight his sets for special effects. He will choose unusual angles of view. He will employ diffusers, gauzes, gauze mattes, and a score of similar devices to bend the normal actions of his camera and lenses to his will. And he will constantly strive to develop new artistic conceptions, and new technical devices to make them possible.

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HAL HALL

says

Appreciation

EVER notice how people in this funny old world of ours seem to be looking only for an opportunity to adversely criticize their fellow men? Guess it must be one of those human failings that have been passed along since the beginning of mankind; a failing that has broken many strong hearts and has lost money for many of the critics.

Most of us like a pat on the back now and then, especially when we have done a particularly fine piece of work—whether it be writing a story, directing a picture or selling a bill of soap. If the boss gives his employee a compliment and a smile, that employee will give his boss still better work, finer results—it is human nature. However, it seems the rule among this gang of humans to forget the good things, the excellent work and accomplishments, and to see and speak only of the mistakes and the failings. What a pleasant world it would be if expressions of praise and appreciation were passed on with the bitter and biting criticisms.



What Do They Want?

ONE of the things that is most difficult to understand in this queer picture racket is the matter of new talent. Everyone in Hollywood knows that there are literally thousands of individuals out here who have good looks, personality, ability—but who are just extras with perhaps an average of two days' work per week throughout the year. Starvation wages at best. Producers, film executives—all send out the cry for all film hopefuls to stay away from Hollywood. Right.

But—in the same breath these same people broadcast the news that they are sending men to the far places of the earth in a search for new talent, new faces, etc. Figure it out for yourself, if you can. It has this writer stumped. Anyway—take a tip from us—don't head towards Hollywood these days expecting to crash the studio gates in any line. If you have any kind of a job back in the home town, hang onto it.



16 Millimeter

FROM Germany comes a report that should be food for thought for exhibitors throughout the world. The Deutscher Schmalfilm Dienst has been established in Germany for the purpose of showing programs on 16 mm. film in the small towns and villages. Operators will be stationed at various points throughout the country, each one visiting twelve villages by motorcycle at fortnightly intervals, showing full length programs corresponding to 10,000 feet of standard sized film. Educational films will be shown at schools at a moderate charge.

The 16 millimeter field has been enlarging quite rapidly during the past couple of years. Already the 16 millimeter equipment has made itself felt and its worth well known in the industrial field. It is only a question of time until it begins to creep into the amusement field. And, why not? This is a world of competition. If amusement can be provided by means of the narrow film it is up to the makers of professional entertainment films to meet that competition. Perhaps we may have better pictures as a result. Who knows?

Ruinous Ballyhoo

THE following article appearing in the May 21st issue of the Hollywood Herald should be read by everyone in the picture industry who has the welfare of the industry at heart. At least, that is this writer's personal opinion. No added comment is needed.

"'This industry is its own worst enemy' quoth Sidney R. Kent in his address to the Academy and, as usual, the old Roman is right. If the present session of Congress enacts a revenue law putting a tax on theatre admissions above ten cents we shall have nobody to blame but ourselves.

"For years we have pursued a publicity policy within this industry that was headed, inevitably, for disaster. Never was an opportunity lost to broadcast to the world the stories of our reckless extravagances. From the housetops we shouted about the enormous salaries of our chosen, lucky few. With the world aflame with the deadly virus of starvation and want; with more than 8,000,000 unemployed in this country alone—25 per cent of our total working population—we stage, if you please,—a 'gala premiere' for all the world to see and to marvel. We take the occasion to exhibit to the onlooking mob our costly furs, our gorgeous jewelry, our ritzy motors and our glamorous ladies. We illuminate the skies with a hundred Kliegs and employ the facilities of a nation-wide broadcasting system in order that millions outside Hollywood may share the envious reactions of the local gang of onlookers—'admirers,' we call 'em—who stand huddled behind the police ropes.

"And the very next meeting of the Senate Finance Committee at the nation's capital amends the House legislation by fixing the admission tax on tickets at ten cents—instead of the House rate of 45 cents!

"One young man in our midst chucks his job because the \$1,400 a week offered him is not enough. An executive earning close to \$2,000 a week refuses to accept a 'cut' and sulks in his tent. A newspaper columnist is offered a contract for four weeks' work on a picture at \$50,000 and the fact is duly recorded in newspapers throughout the land. A studio expends \$125,000 on a production in excess of its allotted budget and boasts about it in the trade papers. A musical comedy star, in Hollywood to do a picture, is reported in the public prints as due to receive \$15,000 and a split over the house average for a week's appearance at a motion picture theatre in San Francisco. And all of this in the face of the most widespread industrial depression this nation ever has witnessed!

"Some folks among us seek to argue that all this talk about big money is thoroughly orthodox from the standpoint of up-and-at-'em showmanship. If this be so, then let us face the facts and be prepared to accept the consequences. If, on the other hand, this is not the case, let us put a stop once and for all to this stupid type of ballyhoo. Certain it is that we cannot retain both the penny and the cake. Either we can afford to accept this ruinous taxation and make the most of it, or we cannot afford it. And if we cannot afford it, let us leave no doubt of that fact. The best way to clarify the situation is to stamp out entirely anything that even smacks of dollar publicity."



"Vanity"

Sophie L. Lauffer, F.R.P.S.





The three charming photographic studies found on this and the opposite page were made by Bruce Lindsay, of Windsor, Conn. Above—"Twin Maples." Upper opposite page—"Hill Road." Lower—"Contentment." These pictures entered in this magazine's pictorial competition.

Period Costumes

(Continued from Page 9)

specific, a great deal less at either end than would have been considered proper, even for such an improper person, during the '80s. In one sequence in the cafe, she wore a hat that was, properly speaking, several decades earlier than the rest of the costume—almost the Empress Eugenie style, in fact. But it was sufficiently modified to be both in keeping with her character (and the mood of the sequence) and with modern ideas. I doubt if any hat of the actual period would have been compatible with these requirements.

In designing these various costumes, we attempted to aid in characterizing the players—in making their roles stand out in contrast from each other—by the costumes. This was largely achieved by the differences in design and materials. Miss Hobart's costumes were simpler in design, and more graceful than were Miss Hopkins'. The fabrics used in Miss Hobart's costumes were largely of solid colors, and the whole struck a reserved note. The fabrics used for Miss Hopkins' costumes were relatively loud, and were rather profusely ornamented with lace and gaudy ruffles, striking a gauche note more appropriate to the gamine. Miss Hobart's costumes concealed her figure; Miss Hopkins' accentuated hers.

The costumes for "The Strange Case of Clara Deane," being of more recent periods, which are still fresh in the memories of most of us, could not be so greatly modified. Fortunately the story, being biographical, permitted an almost photographic accuracy of detail. Therefore, Wynne Gibson's costumes—as well as those of most of the feminine players—were almost perfectly accurate technically, the chief modifying influence being the purely photographic requirements incident to any motion picture.

The third problem I have mentioned—making the costumes look right on the figures of modern women—entered the case in both pictures. Such experiences give one a new respect for the human framework. It is amazing how cruelly some of the fashions of the past have distorted the shape—not only the outline, but the actual shape of the human body. The modes of the period in which "Dr. Jekyll and Mr. Hyde" was laid required a large bust, a wasp waist, and exaggeratedly large hips. These contours were further exaggerated by the full sleeves, be-ruffled shoulders, extremely low necks, and ungainly bustles of the period. These are the direct antithesis of modern modes; accordingly, the figures of modern women have changed to conform with the style. Miss Hobart is an excellent example of the difficulties we encountered in this respect. She is, physically, a typical modern woman: slender, but possessed of a decidedly natural, healthy figure. Therefore the problem of costuming her so as to even suggest the unnatural silhouette of the period was extremely difficult. Of course, good, Victorian corsets formed the foundation: but even with their aid, her waist was inches larger than was proper back in 1880. Therefore, we had to do the rest with puffs, ruffles, bows and padding. And—we had to do this so that the result on the screen would be both natural-appearing and yet satisfactory to modern audiences! The problems that we encountered with the extra players—who, of course, had to be costumed economically—can be imagined.

The problems encountered in the earlier sequences of "Clara Deane" were of a different nature. In 1912, the silhouette was svelte and encased in sheath-skirts. One didn't walk in them—one undulated. From the designer's viewpoint, it was exceedingly difficult to design such costumes so that they would appear accurate, and yet at the same time be graceful on modern women. I imagine that the casting director had more than a little trouble finding players who could wear these styles satisfactorily, and that the director had quite as much in making them appear natural in them—especially, to move



An authentic 1912 design used in "Clara Deane"

naturally in the hobble-skirts, after so many years of broad, short skirts.

The designing of period costumes is, of course, influenced by many of the same factors as is the designing of costumes for any production. The costumes must fit the story, the situations and the sets. There is almost invariably insufficient time allowed to prepare them for use, and too little opportunity for cooperation with the art and camera departments. Costumes are all too frequently approved and ordered one day for use the next; the real heroines of most pictures are the patient women who slave all night to have the star's costumes ready to wear on the set for an eight o'clock call the next morning. Then, too, the stylistic requirements of individual stars must be kept in mind. Some stars require certain materials, certain types of design; others require definitely different types. I cannot dress Marlene Dietrich, for example, as I would Frances Dee, or yet Claudette Colbert. Miriam Hopkins requires different styles from Sylvia Sydney—and Carole Lombard and Jeanette MacDonald require still different types of costumes. These requirements must equally be borne in mind in designing period models. By these requirements, of course, I refer to the actual stylistic needs, and not the personal preferences of the individual players, which must, too, be considered to a greater or less extent. These personal preferences are sometimes helpful in designing ordinary costumes, but are very rarely so in the case of period designs, which require a specialized knowledge that the average layman does not have.

And yet, despite all of these difficulties, I enjoy costuming a period film. Perhaps it is because period productions are relatively rare, and afford a diversion—a break in the regular routine. Perhaps it is because they offer new problems, totally different from the film-costumer's usual task of creating new variations of current modes, and outguessing the fashions of six months from now, when the film will be released. At any rate, it is a field that offers great possibilities and unbounded interest.

Concerning Cinematography

Critical Comments on Current Pictures
by **WILLIAM STULL, A. S. C.**

GRAND HOTEL

◆ It is not unusual to find a production in which one or two out of the many elements that go to make up a motion picture may be termed perfect, but rarely indeed do we find a film like "Grand Hotel," in which every phase—technical, artistic and executive—is uniformly and superlatively perfect. "Grand Hotel" exemplifies what motion pictures can be at their best: a great story, perfectly cast, lavishly and intelligently produced, with all of the technical and artistic phases not alone individually brilliant, but perfectly coordinated. Sufficient acting talent for a dozen "super-specials" has been combined in this one production: yet the story gives each star an ideal part for his or her talents, and Edmund Goulding's well-nigh flawless direction has evoked a great performance from each player. But, in so far as this department is concerned, it is the perfection of the technical details that is of paramount importance. Never before have I seen a picture in which the contributions of cinematographer, director, art-director and costumer were so perfectly coordinated. The work of each was individually brilliant; but this is often the case: what makes "Grand Hotel" so unusual is the fact that each of these several artists has seemed to be working with a perfect understanding of the ideas of the others, and together they have set a new high standard for technical perfection.

Cedric Gibbons' conception of the settings could not have been improved upon. Architecturally, they are most distinctive, as his sets always are; but—what is far more important—they are perfectly attuned to the moods of the scenes played upon them, to the costumes worn by the players, and to the photographic requirements of the story. The costumes designed by Adrian are equally well-matched to the sets, the players, the photography, and the story. The direction, as remarked before, is dramatically brilliant—but more than this, it takes full advantage of the possibilities of the sets, and allows the photographer a perfect chance to express the artistry that is William Daniels'.

As to the photography itself, such an artist as Mr. Daniels has proven himself to be could hardly have erred with such opportunities as the players, direction, sets and costuming of "Grand Hotel" provide; but Daniels has done more than this—he has excelled himself. He has not only made each scene artistically and technically brilliant, but he has perfectly matched the dramatic mood of each scene with every detail of his camera-craft. His compositions and lightings are flawless; his use of angles and camera movement, perfection. It must be mentioned in this connection that the director wisely left the matter of moving shots entirely up to Mr. Daniels: the result should be studied with care by the many directors of lesser calibre who so frequently attempt to conceal their directorial shortcomings with a reckless over-indulgence in camera-movement. The trucking-shots in "Grand Hotel" are cameraman's trucking-shots: not one of them is used except for a legitimate dramatic purpose; none of them merely to give movement to the picture, or to provide synthetic "originality." The same applies to camera-angles. Mr. Daniels deserves an additional palm for his intelligent use of these tricks—and Mr. Goulding another for giving his co-worker a free hand in this delicate phase of cinematography.

But it is in the less obvious phases of his work that Mr. Daniels has reached his greatest heights. "Grand Hotel" strikes a wide variety of emotional and dramatic moods as it unfolds its story, and the plot-construction requires a great deal of intercutting of these. The manner in which Mr. Daniels has

met this artistic problem has never been surpassed, and seldom equalled. It is difficult enough to sustain the simpler dramatic moods of an ordinary feature—and so, Mr. Daniels' achievement in sustaining the photographic uniformity of his picture while matching the infinitely varying emotion keys of "Grand Hotel" deserves praise of a more than superlative order. He has used every artifice known to cinematography in so doing—yet without conveying the impression of artifice at any time. "Grand Hotel" should be studied by every cinematographer, professional or otherwise, the world over.

BERLIN—DIE SYMPHONIE EINES GROSSTADT

◆ Correctly speaking, a picture that was made in 1926, and never released in this country, has no place in this column; but "Berlin—the Symphony of a City" is a film which should be studied by every cinematographer, director, writer, cutter and producer in the industry. It was made some years ago, by Karl Freund, A. S. C., and was shown at the May meeting of the American Society of Cinematographers through the courtesy of the Fox Studio, whose library contains the only print of this film in America. Every one whose business is the making of motion pictures should see it.

SOCIETY GIRL

◆ There are certain cinematographers of whom you can almost invariably expect outstanding cinematography. One of these is George Barnes, who photographed "Society Girl," but this picture does not reveal Barnes at his best. He has achieved many individually fine scenes, but has erred in attempting to set too widely divergent photographic moods for the two principal characters—a society girl and a prize fighter. The moods that he has set for these two opposing ideas are in themselves excellent, but when used together, and intercut, they make the picture as a whole unpleasantly uneven and spotty.

THIS IS THE NIGHT

◆ This is another frothy little musical romance of the Lubitsch school, and, as such does not offer spectacular opportunities for photographic originality. But in it, Victor Milner, A. S. C., one of the few real masters of the art of photographic lighting, has achieved some of the finest lightings ever seen in this type of picture. The film's real claim to importance, however, is the manner in which Frank Tuttle has utilized sound—especially in the opening sequences and the baggage-men's chorus. He has developed and improved upon the ideas suggested by Lubitsch and Rene Clair, and brought the perfect sound-film, in which sound is used more for cinematic effect than for dialog, many steps nearer actuality. Several sequences in this picture, too, are printed on tinted-base positive, to excellent advantage.

AN APOLOGY

◆ In my review of "The Lost Squadron" last month, I mistakenly credited the excellent process work to Lloyd Knechtel. I have since learned that Vernon Walker, A. S. C., was responsible for this work. My recollection of the picture is that Mr. Knechtel received screen credit, presumably as department head. As I know Lloyd too well to imagine that he would want credit for the achievements of his co-workers, I can only blame the lamentably unfair system now in vogue in most studios, whereby in such cases as special effects, recording, etc., screen credit is given to the department head, rather than to the subordinate actually responsible. Let us hope that this will soon be remedied. In the meanwhile, both Lloyd and Vern remain outstanding in their work, regardless of the allotment of screen credits!

.. In the Realm of Sound ..

Wide Range Recording and Reproducing Announced by Erpi

WIDE Range Recording and Reproducing, the newest and most advanced development in talking picture recording and reproducing, has been formally announced by Electrical Research Products. It will be available in the near future to exhibitors and producer-licensees using the Western Electric Sound System.

Wide Range Reproducing alone was given its first public demonstration in a theatre before a specially invited midnight audience at Fay's Majestic, Providence, R. I., the second week of May. The installation has since been maintained and is being used at the regular performances in the house.

Wide Range accomplishes what scientists and engineers have been striving for for a considerable time, namely, an extension of the frequency and volume ranges of sound that can be recorded and reproduced. With the Wide Range System the frequency range is extended to cover from as low as 40 to as high as 8,000 cycles.

The chief claims made for the resulting sound are a quality never hitherto reproduced, greater naturalness, intimacy, an easier intelligibility of dialogue and a more thrilling effect of great volume free from any distortion. With Wide Range it is possible to record and reproduce the extreme soft sounds of whispered conversation or the individual instruments of an orchestra together with the heaviest passages that were formerly precluded by the limitations of existing recording and reproducing systems.

Wide range has been made possible by a refinement of recording and reproducing apparatus. The chief change in the latter lies in the introduction of a new high frequency loud speaker unit capable of reproducing even beyond the limits of audibility. Certain other modifications in the reproducing system are also involved.

The demonstration at Fay's Majestic assumed additional importance not only from the enthusiasm and prestige of the invited audience but also from the sentimental interest in the fact that the Majestic was one of the first theatres to show talking pictures. It was equipped for sound on December 25, 1926.

The advantages of Wide Range reproduction evidenced at this demonstration will become even more pronounced, it is claimed, after motion picture studios have completed the installation of equipment for Wide Range recording. The equipment for modifying a studio recording channel for Wide Range involves no major changes except the substitution of the moving coil microphone for the present condenser type microphone and the addition of simple electrical networks. High quality monitoring is also necessary.

An interesting feature of the demonstration at the Majestic is the fact that the installation was "tailor made." The equipment and installation were adapted specifically to fit the physical and acoustic characteristics of the house.

This innovation introduces the policy of recognizing a theatre's individual characteristics and will be adhered to, Electrical Research Products officials state, in all Wide Range installations.

Pre-Set Fader Stop Put Out by GoldE Co.

A PRE-SET fader stop, a device for providing instantaneous changeover with inequality of volume, has been put out by the GoldE Manufacturing Co. of Chicago, and is being distributed by the National Theatre Supply Co.

The device consists of a friction stop with a projecting arm. The stop slides on a ring before the face of the fader and may be placed in any position around the full circle. The arm carries a rubber cushion which contacts the fader-pointer and arrests it at the pre-set positions as the pre-set fader stop has no pins, holes, ratchets or other fixed-position arresting devices. Speed is another claim made for it by the manufacturer in that a word may be taken half from one reel and half from that following without interruption and with no difference in volume.

The pre-set fader stop is attached only by the lower face-plate screws on Western Electric Faders, the company declares, making unnecessary any alterations of the fader. Attachment is made in about five minutes. Prevention of sudden blasting is claimed because overrunning is prevented, and diminution of volume caused by stopping short of the correct number and creeping up to it, it is claimed.

Novel Film Amplifier From Samson Electric

A NOVEL amplifier for use as portable or permanent booth installation of sound-on-film talking picture equipment known as the "Cine-Pam," is being put out by the Samson Electrical Co. of Canton, Mass. Any panel of the device, it is said, can be removed by taking out 4 screws without breaking a soldering connection as all connections are made with flexible wire and plugs. Tubes can also be exposed for easy replacement through this unique method of panel removal.

The device is 28¾ inches long, 20¼ inches high, 10¼ inches deep, weighs 104 pounds and comes provided with two 15-foot lengths of shielded cable from photo cell in the sound head to the amplifier which can be increased to 25-foot lengths if desired without any noticeable loss in high frequencies, the company declares.

The Cine-pam is entirely AC operated and supplies photo-cell voltage and exciter lamp current.

Photo-Electric Cells

DESIGNED of tested materials and offered in all types and sizes, a line of photo-electric cells that are declared to have achieved ultimate present-day protection is being put out by the Telephoto & Television Corp. of New York. Sensitive to the highest degree, they reduce the amount of amplification required for tonal reproduction obviating to a remarkable extent the possibility of distortion, the company claims.

Shield For Projectionist

A LIGHT shield for Simplex mechanisms, consisting of dark ruby observation glasses on both sides, and provided with a pilot lamp, enabling the projectionist to thread the film in frame before starting without having to look at a blinding spot, is being marketed by the Walter G. Preddy Co. of San Francisco.



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S.M.P.E. Convenes in Washington

MORE than two hundred technicians and research specialists of the motion picture industry gathered in Washington, D. C., the second week of last month for the four-day semi-annual meeting of the Society of Motion Picture Engineers. The meeting, first under the presidency of Dr. A. N. Goldsmith, was held at the Wardman Park Hotel and was one of the most successful and enthusiastic in the history of the organization.

As is always the case at these S.M.P.E. meetings, a very brilliant group of technical papers was read at both the morning and afternoon sessions. Educational topics and 16 millimeter cinematography were given a very prominent place among the papers and discussions. Four papers by C. L. Greene, H. Pfannenstiel and R. A. Miller, H. C. Holden, R. G. Tasker and A. W. Carpenter served to bring home to those in attendance the importance of the 16 millimeter development. The Standards Committee which has been working on standardization of 16 millimeter dimensions, gave a report which was referred back to the committee for further consideration.

An unusually interesting paper on "Recording Artificial Speech in Motion Pictures," was presented by C. W. Barrell of the Western Electric Company. In this paper it was pointed out that for the first time motion picture recordings have been made of human speech re-created by an artificial larynx. A brief description was given of the mechanical voice box which replaced the natural larynx when that organ had to be removed by surgery. An excellent motion picture showing just what had been done, was shown in conjunction with the paper.

Kurt Schneider, of the Oehler Machine Company, Astoria, L. I., presented a paper on "A New Light Control for Printing Machines" which described a device for automatically controlling the intensity of the printing light so that successive scenes of each print receive respective exposures which have been previously assigned to them. Another paper was given on "Extension of Film Recording and Reproduction" by G. L. Dimmick. This paper was of unusual interest, pointing out that improvements have been made in recording of sound-on-film and in the reproduction of sound from film which have resulted in an extension of the frequency range and in the volume range. The paper explained that the low frequency range has been extended by the use of a loudspeaker unit which gives good response from 60 cycles to 10,000 cycles. The high frequency range has been extended by the use of a ribbon type microphone and by the reduction of film attenuation. The use of a narrower recording slit and a large mirror galvanometer have improved the high frequency response from the film, and the ground noise reduction system is simplified and made more effective.

H. C. Holden in a paper on "A 16 MM. Sound-on-film Projector," described a talking picture equipment suitable for the non-theatrical field, and gave a brief review of the problems involved in obtaining a sound record of good quality on the narrow film. Another paper by W. F. Bonner and B. F. W. Heyer, dealt with the "Application of Rectifier Power Supply to Sound Reproducing Equipment," and Lieutenant C. E. Fraser gave a paper on "Motion Pictures in the U. S. Navy." This paper brought out the interesting fact that the navy now owns 467 features and is procuring an average of 25 features and five shorts monthly.

Stanley Sumner of the University Theatre, Cambridge, Mass., in a paper on "The Film Problems of Theatre Operation" brought out the fact that the condition of film after about thirty days on the road is not all that could be desired. Many valuable suggestions were offered in the matter of handling the films by exchanges and theatre shipping departments. The new Bell & Howell fully automatic sound and picture produc-

tion printer was adequately described in a paper by A. S. Howell, B. E. Stechbart and R. F. Mitchell. Another paper by A. Warmishan and R. F. Mitchell described the new Bell & Howell Varo "zoom" type lens. This paper was accompanied by a reel of pictures made with the lens and showing what can be done with it in practical work.

In a paper by E. W. Beggs of the Westinghouse Lamp Company, on "Standardization of Picture Projection Lamps" it was pointed out that 130 types of picture projection lamps are required today to fill the demands. Mr. Beggs made a plea to the Society of Motion Picture Engineers to attack the problem of standardization in this field so that an ideal set of lamps may be decided upon and better results be secured at less cost.

W. C. Jones and D. T. Bell then gave a paper describing an ingenious device called "The Lapel Microphone." Many speakers, they explained, find it difficult to use the conventional type of microphone because of the restrictions it imposes on their freedom of movement. A microphone has been designed to be worn on the speaker's clothing. The new microphone is such as to provide a vibratory structure of low mass and stiffness which resonates at a comparatively high frequency. The resilient support for the diaphragm also adds sufficient mechanical resistance to prevent a prominent peak in the response at the resonant frequency. Means are also provided for reducing extraneous noise to a minimum. A part of the sound reaching the microphone is due to body vibration. This sound, they explained, is rich in low frequencies and must be attenuated, otherwise the quality of transmission will be unnatural. This is accomplished in the design of the coupling transformer. This transformer, together with the apparatus required for suppressing clicks, indicating when the circuit is in operation, is mounted in a control cabinet. A flexible cord connects the microphone with the cabinet.

"Biplane Filament Construction—The New High Intensity Incandescent Light Source" was the title of a paper given by J. T. Mili, of the Westinghouse Lamp Company. The following abstract gives the highlights of the paper fairly adequately:

"Manufacturers of motion picture projectors have been continuously demanding increasingly brighter and more uniform light sources. The biplane staggered filament construction, consisting of two parallel rows of coils, so placed that the coils in one plane fill the spaces between coils in the other, is now being presented as the lamp manufacturer's answer to this demand of the industry. A report is presented on comparative tests made with monoplane and biplane filament lamps ranging in wattage from 200 to 1000, with several types of optical systems. These tests show that:

- (1) The average brightness of a biplane light source is approximately double that of a monoplane source of the same wattage.

- (2) With any projection lens system a biplane filament may be expected to give about 50% increase in screen illumination over a monoplane filament of the same size and coil brightness. This of course involves doubling the wattage.

- (3) The increased uniformity of the biplane filament makes possible more efficient condenser designing, since the periodic variation in intensity across the source is decidedly less with the biplane than with the monoplane.

- (4) With most of the existing Kodacolor projectors an appreciable increase in illumination and greatly improved and more uniform appearance may be had by the use of this new source.

- (5) With the biplane filament small variations in the lamp, mirror, and lens settings such as met in actual practice are about half as serious as with the monoplane.

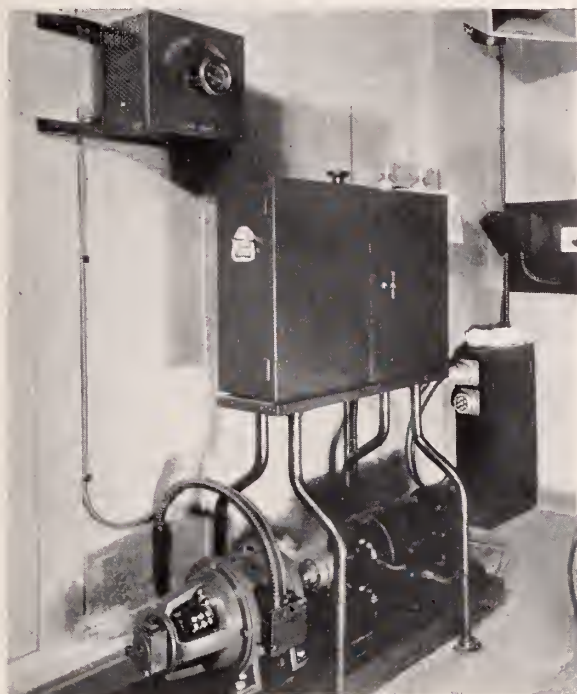
(Continued on Page 49)

Speed Control

(Continued from Page 14)

motor field rheostat at a point where the motor has a tendency to run slightly above normal speed.

The difference between this and the governor control methods is that a correction is applied, at approximate intervals of one one-hundredth of a second, instead of one correction every few seconds. It is apparent that no extreme peak or



Tuned control, master motor, 720 cycle generator and distributor Selsyn as used in major studios today

valley can be reached in this low period of time, so that a characteristic graph will show as a straight line. An alternate method of fork control is provided in having the fork control through the AC torque. Both methods are highly satisfactory, and will maintain speeds to within one one-hundredth of one percent, or to one part in ten thousand.

In controlling the speed of compound wound direct current motors by the use of a commutator and tuning fork, in series with the control field windings, interlocking of additional motors is accomplished by a master controlled motor, having a commutator for each motor so controlled. This method eliminates the losses incurred in combination AC DC motor generators, and provides interlocking at the full efficiency of the DC motor, and at the cost of DC equipment.

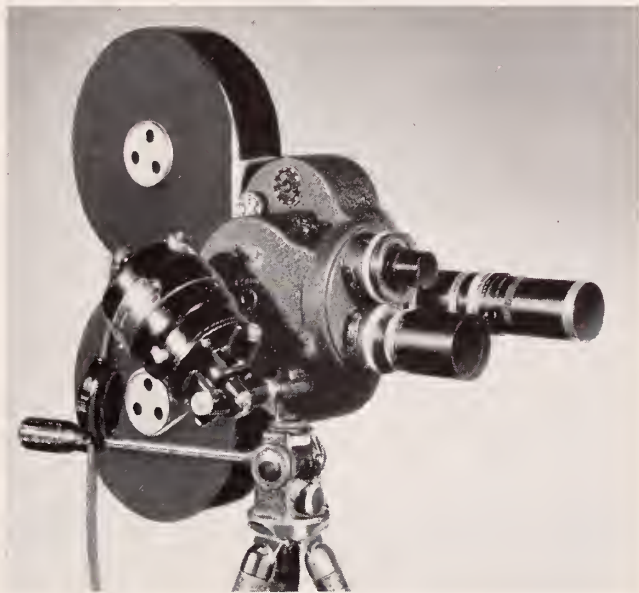
In general, a speed control and interlocking system should preferably be one wherein the correction time factor occurs at no greater intervals than one one-hundredth of a second. Any changes which occur in shorter periods than this will not be noticed by the audience.

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Portable 35 MM. Movie Camera With Electric Motor

TO MEET special demands for airplane motion picture work and for outfitting scientific and exploring expeditions, the Bell & Howell Company has arranged to equip its portable 35 mm. Eyemo movie camera with an electric motor. Also an external film magazine carrying 400 feet of film can be added.

In airplane photography the motor feature is particularly desirable in that the pilot can place the camera with attached motor in an advantageous position and shoot pictures by remote control.



The Eyemo with electric motor

Any Eyemo camera employing a hand crank can be motor equipped. The motor is mounted on one side of the camera, engaging in the hand crank socket. The motor runs the film through at speeds of from 24 frames down to 4 frames per second, the speed being adjusted by the camera governor. The motor weighs only $3\frac{3}{8}$ pounds, and inasmuch as the camera only weighs $8\frac{1}{2}$ pounds, the combined weight of the motor and camera is such that an aviator or explorer will find that taking this type of 35 mm. equipment along does not involve any appreciable weight factor.

When an external film magazine is not attached, the film is run from a 100 foot spool in the camera itself, as formerly. If desired the motor runs the entire 100 feet of film through without stopping.

Either a 12 or 110-volt motor can be adapted to the camera. The 12-volt motor is particularly practical for airplane work as this current is available from the plane batteries. Current for the 12-volt motor can also be supplied by auto batteries on exploring expeditions.

The motor is readily attached to the camera and just as readily detached. When it is not desired to use the motor, the camera can be operated by spring drive while held in the hand—the usual manner of operation—or it can be set on a tripod and operated by hand crank. Thus a high degree of utility and flexibility is combined in a unit of surprisingly small weight.

The Eyemo camera has long been a favorite for motion picture work where standard size film is desired and where a regulation professional camera is not feasible due to its bulk and weight, or other reasons. The new motor development adds another desirable feature to the Eyemo as does also the external film magazine.

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Four Good Fellows



An informal shot of Maurice Chevalier and three cameramen, snapped at the Paramount lot in Hollywood. At Chevalier's right is Victor Milner, A.S.C., who is photographing the star in "Love Me Tonight." At his left are Cameramen Reshard and Johnson of the Paramount News Reel staff. All cameramen like Chevalier and Chevalier likes all cameramen, so it was only natural that this picture should happen when the News Reel men came in to talk over old times with Milner, who was once a news reel man.

Photo by Bert Longworth.

Tinted Stock

(Continued from Page 11)

	Exciting Influence	Tranquilizing Influence	Subduing Influence
Crimson	41	0	10
Scarlet	56	0	0
Deep orange	59	0	0
Orange-yellow	55	6	0
Yellow	53	6	0
Yellow-green	14	39	5
Green	28	32	0
Blue-green	32	23	6
Blue	11	21	30
Violet-blue	0	17	45
Violet	0	6	54
Purple	3	1	48

Further pertinent remarks on both the technical and esthetic aspects of color for motion pictures were made by Dr. Loyd Jones, A.S.C. in the AMERICAN CINEMATOGRAPHER, (July and August, 1929, issues) in an article on "Tinted Film for Motion Picture Positives" and its sequel, "The Emotional Appeal of Color."

Tinted positive stock is commercially available today. It costs no more than ordinary, untinted stock. It does not detract from the quality of the sound, yet it adds immeasurably to the emotional quality of the picture, for it enables the cinematographer to put the finishing touch on his attempts to visually match the mood of each scene. The various manufacturers of film have gone to a great deal of trouble and expense to develop a range of tinted stocks suitable for use with sound pictures: one manufacturer offers us eleven tints, another four. Between them, we are sure to find the answer to many of our problems in perfecting the visual and emotional appeal of our pictures. And—the perfection of these factors must inevitably react favorably at the box-office. Therefore, in these days when anything and everything to improve the box-office value of the industry's product must be done, can we ignore such a powerful aid as tinted-base stock—especially since it costs no more, and improves our work, the directors, and the players' so powerfully? Dare we ignore it?

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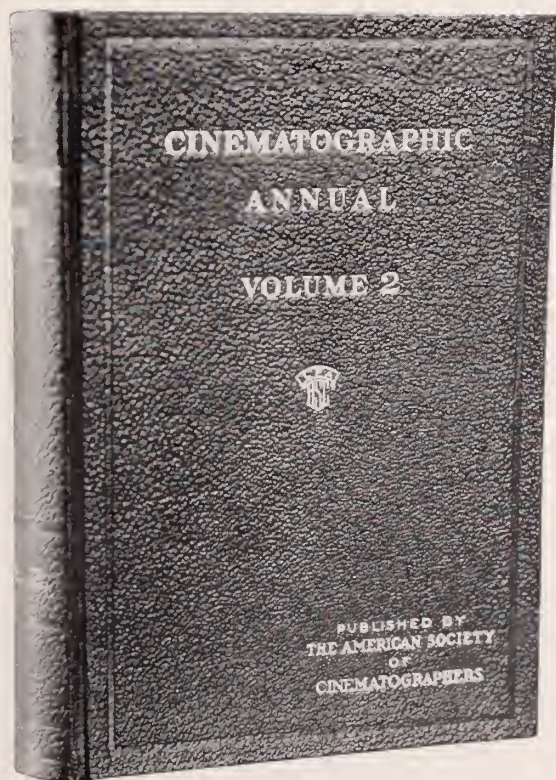
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Principles of Sensitometry and Their Practical Application

Part 14

IN considering the general subject of development it must be remembered that the silver grains which form the developed image are held in a layer of gelatin. This gelatin is used in making the emulsion which is coated on the support to make the sensitive film. The chemical process of development consists of the removal of the bromine from the silver bromide in the emulsion so as to leave the grains of silver behind.

There are many chemicals which will remove bromine from silver bromide but in order to act as a developer it is necessary to choose chemicals which have the power of converting the exposed silver bromide to metallic silver. These chemicals must not act upon the unexposed silver bromide because if such action should take place on the unexposed area it would be impossible to distinguish between that section of the emulsion which was exposed and that which was unexposed. There are only a very limited number of chemicals having this power of distinguishing between the exposed and the unexposed grains of silver bromide and as a result there are only a few substances which are suitable to use as developer. It should be borne in mind also that the chemical agent used as the reducing agent cannot work efficiently alone so that we must build for the proper development of an emulsion a formula which consists of the developing agent, or agents, and several other assisting chemicals.

In sensitometric parlance we usually think of a formula as consisting of four elements, designated by the letters R, A, S and B.

"R" stands for the reducing agent, such as pyro, elon and hydroquinone etc. "A" stands for the alkali which speeds up the action of the developing agent. Such chemicals as sodium carbonate and borax fulfill this capacity. "S" stands for sulphite, which is a preservative and prevents oxidation of the solution. Sodium sulphite is usually the chemical used for this purpose. "B" stands specifically for potassium bromide, which is the common restraining agent and this chemical plays a large part in preventing the development of the unexposed silver grains. In other words, it, among other things, retards the growth of fog.

Practically all developers, except physical developers, fulfill the requirements of the R.A.S.B. formula. This applies to formulas used for the development of negative or positive materials.

Following the above generalized statements it would be well at this point to deal a little more specifically with each of the types of chemical agents. We shall consider first the developing agents themselves.

Pyrogallol (pyrogalllic acid) is made from gallic acid which is obtained from gall nuts imported from China. These nuts are fermented to obtain the gallic acid and the acid is then heated in a still from which the pyrogallol is distilled over. Pyrogallol is made in both the crystal and powder form.

Hydroquinone is made from benzene, which is first converted into aniline and then oxidized. Although it is somewhat less powerful as a reducing agent than pyro, it has less propensity to give stain. Hydroquinone is used most often in conjunction with elon and, as a matter of fact, practically all motion picture developers contain hydroquinone and elon. Hydroquinone keeps very well when used in tank developers because it does not oxidize readily.

Elon is a trade name for the organic chemical monomethyl para-aminophenol sulphate. Elon is chemically related to aniline, which is used as the base of coal tar.

There are numerous other developing agents but those above mentioned are by far the most common and in present day practice, particularly in the motion picture field, hydroquinone and elon are used almost exclusively as the developing agents.

The other chemicals used in conjunction with the developing agents will be briefly listed and explained here. Sodium carbonate is made by the treatment of salt solution with ammonia and carbonate dioxide which reacts with the salt to produce sodium bicarbonate. The sodium bicarbonate is then heated and half of the carbonic acid is driven off, producing what is known as "soda ash." This is then dissolved in water and crystals containing ten parts of water are produced. From this a crystalline salt with either one or ten parts of water is prepared for photographic use but owing to the uncertainty of the composition of these crystals, pure dry sodium carbonate is usually prepared. This is obtained by heating the pure bicarbonate, which can be precipitated from a solution of the crystals by means of carbon dioxide gas.

Borax, or sodium tetraborate, is prepared from certain calcium ores by first roasting, then boiling in sodium carbonate and bicarbonate solution and finally crystallizing in large iron vats. It is interesting to note that virtually pure sodium borate is obtained from Kern County, California, and requires only dissolving, filtering, and re-crystallizing to prepare it for the market.

Sodium sulphite is prepared by blowing sulphur dioxide gas into a solution of sodium carbonate. When sulphite is crystallized from the cooled solution it forms crystals containing seven parts of water to one of sulphite, which contains, when pure, fifty percent of dry sulphite. These crystals give up water when kept in the air and form a white powder on the surface. The dessicated salt may be prepared in a pure state almost free from sulphate. Sulphate is formed by oxidation when sulphite is exposed to the air. The dessicated sulphite when prepared as a dry powder will keep well for a long time.

Sodium bromide is prepared by the action of bromine on sodium hydroxide. This chemical can be obtained in a very pure state.

In our next article we shall begin our discussion on the development of the photographic image and consider somewhat the structure of that image. It is proposed also to present formulas which are useful in the development of motion picture films, both negative and positive, in tanks and in machines.



3,500 Installations Made by Photophone

MORE than 3,500 installations of sound reproducing equipment have been made so far by the Photophone division of RCA Victor Co., said E. O. Heyl, manager of the division, at the RKO sales convention last month. The company also has equipped 30 licensees of recording apparatus in Hollywood and studios abroad, he declared. Replacements, universal adoption of A-C current and widespread interest in the new 16 mm. sound-on-film portable apparatus have been keeping Photophone at capacity production, Heyl added.

Now they're "shooting" *it on location, too*

FOR some time after its announcement, Eastman Super-sensitive Panchromatic Film was used chiefly under artificial light. Now many cameramen are "shooting" it on location, too...for these reasons: (1) Its speed substantially lengthens the photographic day... (2) It offers special advantages in photographing certain types of scenes and costumes... (3) In *all* scenes it yields that subtly superior quality which marks the most advanced motion picture photography... (4) It gives the cinematographer a single negative medium for all purposes...a medium which, once fully understood, affords a range of possibilities bounded only by the user's imagination and technical skill. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN *SUPER-SENSITIVE*
Panchromatic Negative (*Gray-backed*)

Sound Recording—Art or Trade

(Continued from Page 17)

With the sound man, it is different. He places his microphone, and adjusts his circuits to get a good, commercial record—and lets it go at that.

And yet—just as much creative artistry is possible in sound recording as in cinematography. But the creative will must be behind the apparatus; creative ingenuity must be exercised to manipulate and modify the apparatus to produce these new effects. And, thus far, this impulse is lacking.

Of course, our present-day sound equipment is to a certain extent inflexible. But—so was the motion picture camera at the start. Originally, the motion picture camera was an imperturbable, unimpressible box, which, when fed with film and properly cranked, produced an accurate, commercial record of whatever action took place in front of its lens. It was set in position for a scene (very accurately, this, for the lenses were fixed focus affairs), and the scene was made—a wiry-sharp long-shot. But the cinematographers were not satisfied; they began to experiment. They moved their cameras about, and produced close-ups and medium-shots. They set them on wheels, and produced trucking-shots. They placed them at unusual positions, and discovered the power of angle-shots. They modified them with filters and diffusers, and learned how far more artistic a modified record may be. They sped up or slowed down their unalterable 16-pictures-per-second cranking speed, and discovered the possibilities of speed-changes, slow-motion, and stop-motion. They bent the unyielding camera to their wills, to heighten the dramatic values of the stories.

The same is true of sound equipment. Today, it is an inflexible, commercial recording instrument. Tomorrow, it may easily become as facile an artistic tool as is the camera. But, like the cinematographer, the recordist must develop an artistic sense. He must learn how to modify his record, and when to modify it. The means is, to some extent, already at hand. The acoustic qualities of sets can be distorted for effect, as has occasionally been done already. Special circuits exist, and more can be developed, to distort or enhance voices. Much can be done with even so simple a thing as microphone placement, to establish dramatic values through sound perspective. The re-recording, pre-recording and post-recording processes—to say nothing of dubbing—can yield a vast deal of dramatic modification. But perhaps the greatest possibilities lie in the realm of pure sonic artistry. Certain foreign pictures—like Rene Clair's—and a few American ones—like Lubitsch's and Frank Tuttle's "This Is The Night"—have pointed the way to a new utilization of sound: not as strictly commercial dialogue, nor yet as synchronized accompaniment or sound-effects, but as an altogether new device in which the sound, with its characteristics of aural rhythm plays a part akin to the visual rhythm and flow of motion that so distinguished the best silent films.

But to accomplish this, the recordist must awaken to an appreciation not alone of the potentialities of sound artistry, but of his individual potentialities as an artist and technician. He must prove himself as an artist, and he must be granted the personal recognition accorded artists in other departments. These done, the future rests entirely in his own hands.

Sound recording today is technically perfect, or very nearly so. Therefore, let us forget that we are recording engineers, and see if we cannot, like the cinematographers, become artistic engineers, instead. For now that sound is no longer a mystery, the day of the recording engineer is declining, while the day of the recording artist is just dawning.

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The Artreeves Color Corrected Optical Unit and Wedgelite Recording Lamp

IT IS generally understood by the Motion Picture Technician that the term "Achromatic" as applied to motion picture Cinematography means that the lenses comprising the photographic objectives are color corrected or compensated to transmit all of the color spectrum without undue loss in any one color or over transmission of another. It is not commonly known however that this same Achromatism may be applied to that which is known as a "Slit," or sound recording aperture.

Color, as per the Photo-Electric Spectrum, has a range in Angstrom Units of from approximately 9000 in the Infra-Red, to 2000 in the Ultra-Violet. The limit of human vision in the Spectrum is from 8000, Infra-Red to 4000, Ultra-Violet. The sensitivity of Orthochromatic Film from 6000, Orange-Yellow to 3200, Ultra-Violet. Panchromatic Film has a range of from 7000, Infra-Red to 3200, Ultra-Violet.

The Audible Spectrum, in cycles per second, ranges from 16 to 16000. The limits of Human Ear sensitivity covering the entire range from 16 to 16000. The Human Voice ranges from 40 to 1,152.

The Artreeves Color Corrected Optical Unit is color corrected for a range of from 7000, (Panchromatic Sensitivity), to 3200, or from Infra-Red to Ultra Violet. And in the Audible Spectrum, this optical unit has a practical recording range of from 16 to 16000 cycles per second. Tests have been made in frequencies up to 25000 cycles or 9000 cycles beyond the highest range of the Audible Spectrum.

To obtain satisfactory results when recording in the higher frequencies, one must also take into consideration the stability of the light source and its ability to stand up under these extreme variations of light without breaking down or falling off. The wedge shaped Cathode as built into the Wedgelite has proven to be the ideal construction for Recording Glow Lamps due to its extreme durability and lack of shadow or "Ghost."

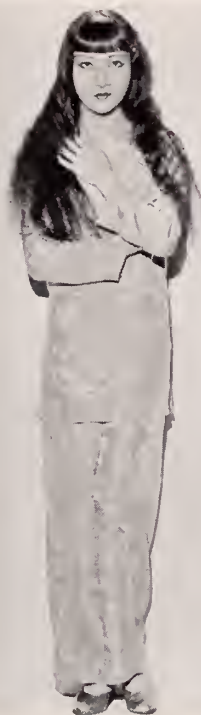
The reader will agree that the light source, or Recording Lamp, used in combination with an Optical Unit must of necessity be so engineered that both light source and Optical Unit are optically matched. To do this, both elements must be built up together and then so corrected as to allow the maximum transmission of light without loss of Actinic values due to the light emitted by the light source being diverted from its intended position in relation to the film stock. Or again, loss of definition or density caused by the inability of the Optical Unit to transmit all of the frequencies or component colors. The Copyright owner of these two elements, the color corrected Optical Unit and the Wedgelite is the Hollywood Motion Picture Equipment Co. Ltd., who are also the sole distributors.

New Exposure Meter

SPINDLER & Sauppe, Inc., of Los Angeles and San Francisco, have just introduced a new exposure meter on the market which is attracting much attention among cameramen in the various Hollywood studios.

This new meter, which appears to be as near fool-proof as any piece of equipment can be, has no batteries. It uses a Weston Cell and a special electrical circuit which makes the instrument extremely sensitive and allows very accurate readings over a range from f 1.4 to f 64. The operation of the meter is simple. You point it toward the object to be photographed and instantaneously the hand on the meter points to the diaphragm opening to be used on the camera lens.

STYLES *from* HOLLYWOOD



◆ Beginning with this issue a page of styles from Hollywood will appear each month in the AMERICAN CINEMATOGRAPHER. This month we give our readers a glimpse of what is what in lingerie in the pictures. At left we see Anna May Wong in a charming pair of red brocaded pajamas for her role in "Shanghai Express," in which Marlene Dietrich was starred. At right and below are two studies showing the very latest in the intimate articles of clothing as worn by the stars. Next month evening wraps will be featured on this page.



Amateur Movie Making

by WILLIAM STULL, A.S.C.

TIME—as more classic writers than myself have often remarked—has a disconcerting habit of stealing up on us. In other words, both the calendar and the weather-bureau agree that it is nearly summer again—and accordingly once more the open season for amateur cinematics. It is hard to realize, in this land of all-year-round filming, that in some sections many amateurs carefully lay aside their cameras, along with their tennis-rackets and bathing-suits, during the winter months. But, for the benefit of the owners of such hibernating cameras, let me drop a hint: why not have your camera checked over now—and be sure that it is in perfect shape for your summer's shooting? If the manufacturer does not have a branch or service-depot near you, your dealer will certainly either have one, or be able to direct you to a competent repair-man. With everything from the Olympic Games and the presidential campaign to the return of prosperity slated for this summer, it's a good idea to be ready to shoot, without fear of breakdowns or buckles.

Direction

According to many letters that have reached this office of late, a majority of the pictures destined for the AMERICAN CINEMATOGRAPHER'S great amateur film contest are soon to go into production. Their makers, I am sure, are interested in the subject of direction. The rest of the amateur camerists seem to be in some way or other interested in it, too. That makes it unanimous—so let's talk it over.

In the first place, contrary to many folks' preconceived notions, direction is not solely the problem of the maker of the dramatic film. No film subject—not even the newsreel—can be a satisfactory picture without some measure of direction. The people who actually do it may call it by some other name—but the result is the same, nevertheless.

Reduced to its simplest terms, direction is nothing more terrifying than the application of common-sense to cinematography—knowing what is wanted, and getting it in the most effective way. One simply cannot think of direction without thinking of cinematography, for the two are inextricably inter-related. If you say that direction means having people move this way or that, or using a close-up here instead of a long-shot, you are quite right: but if you follow the question farther, you will come right back to cinematography, for the answer will inevitably be, "He did so-and-so because it photographs better." In the studios, this is an established fact. Moreover, there are dozens of instances daily of cameramen actually directing the pictures they photograph—simply because they know the basic laws of photographic story-telling, and the director does not. Last week, I had lunch with a well-known director and his cameraman. During the meal, the director remarked, "I don't know what I'd do without — on this picture. Every time I get into a tight spot over some scene, he pulls me out, for he knows exactly what to do. I'd be lost without him." Yesterday one of my friends showed me a telegram a prominent director had sent him after the preview of his (the cameraman's) latest film: "Congratulations on —'s latest picture. You did a splendid job of direction." The amateur has in this respect, the advantage over the professional, for he is in a position to both direct and photograph his picture—and to receive screen credit for both jobs!

Camera-Angles

One of the first points to be learned in directing—and one of the most photographic—is the use of camera-angles. This

includes everything from the distinction between close-up and long-shot to such intricate questions as Director Rouben Mamoulian recently discussed in an earlier issue of this journal. No unalterable law can, of course, be laid down to cover this question; but the answer to any problem in camera-angles can invariably be found in the answers to the questions "What do I want to show?" and, "How can I best show it?"

As a general rule (even in scenic or documentary films) the best plan to follow is to begin each sequence with a long-shot, to thoroughly establish the geography of the scene or set. Then, work progressively closer to the specific part of the scene, or the particular actor or actors upon whom the interest centers. Remember that, except in travel films, where the interest of course centers on the background, the actors in the scene are the important things: the closer one can get to them, the better one can understand what they are doing. One of the greatest faults of most amateur films is the scarcity of closeups. Therefore, don't be afraid to use a little extra film on them. And—when making close-ups, make your scene first as a long-shot, and then go back, and repeat the action in individual close-ups; this makes for easier cutting. As professional producers have found out, it's easier to use a little more film when you are actually doing the shooting than it is to retake missing scenes later, or stretch scenes out to cover gaps in continuity or action.

Continuity of Motion

In the making of any motion picture—even the simplest—we can rarely photograph all of the scenes in their exact order; but they must be made so that, when cut, they will appear as though they had been so photographed. They must, of course, match photographically—be of the same density and gradation, with the same types of filtering and effects. But they must also be the same with regard to direction of movement. The most obvious point for a director to remember is to preserve the proper continuity of movement: in other words, the direction of an actor's movement should remain the same, unless the reason for its reversal is shown on the screen.

Let's take a concrete example. Suppose that Father has sworn off smoking: but he finally weakens, and decides to slip down to the corner drug-store for a cigar. If, in our first scene, we have him come from the door of the house at the left, cross the scene, and go out to the right, we must keep him going left to right until we show him reaching the store and starting his return. If he were shown in one scene walking from left to right, and in the next, walking from right to left without any explanation, the audience would sense something wrong: the change of movement would confuse them. If, on the other hand, he is shown meeting a neighbor who tells him something that represents a definite change of motivation, he may conceivably be shown travelling in the opposite direction—providing that this new direction is maintained to the end of the sequence. Remember, the audience can only judge directions and motives from what it actually sees on the screen, and to keep the thought of motion connected in their minds, it must be continuously in the same direction, regardless of what it would actually be in real life.

If we want to show two separate movements—and keep them separate—we can best do so by keeping them moving in opposite directions on the screen. Of course, if they are definitely established as being on the same path, in the same dramatic direction, they must be so shown on the screen. To

(Continued on Page 40)

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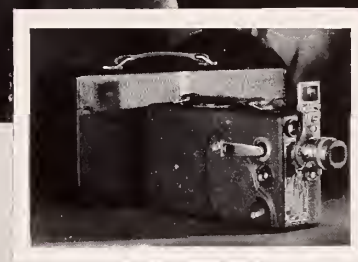
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Ciné-Kodak...Simplest of Home Movie Cameras

Helpful Hints for Amateurs

by HAL HALL

SCARCELY a day passes that does not bring at least one letter to this writer's desk asking for technical information and advice regarding amateur cinematic problems. These inquiries are always answered by mail, but it seems to this writer that some of these problems might be of interest to many of our readers. This article will deal, therefore, with some of these questions in the hope that many of our readers will gain some useful information that may be of service to them in their own 16 millimeter work.

An interesting question was asked recently. It was this: "I want to photograph a scene so it will look as though the action was taking place behind a spider's web. How can I do this?"

There's one for the ambitious amateur to try. Well, here is how to do it. Take two wooden blocks, small enough to be handled conveniently, and place a bit of ordinary LePage's glue between them. Rub the blocks together for a moment, then pull them apart—and you have your spider's web, or at least part of it, ready to be placed wherever you desire. Put it in front of your lens and photograph, and you will have your effect.

Another reader asked: "How can I arrange my projector so that the picture is thrown at right angles to its normal path? I have not sufficient space to use it normally."

This is how to do it.—A small mirror fixed in front of the lens might do, though with ordinary mirrors you would probably have trouble with reflections from both surfaces of the mirror. An optical mirror, such as the Bausch & Lomb Company uses on some of its "still" projectors, would be better and would have a satisfactory long life if properly cared for. However, the best arrangement would be an optical prism mounted on the lens. This, however, would have to be large enough to accommodate the enlarging beam of light as well as the one entering from the lens. It is possible that the device the Bell & Howell Company markets as a "Prismatic Eye" for their cameras might do the trick.

Another amateur asks what is the best diffuser to use: gauze, disc or soft-focus lens. I would say that the disc is best, for it maintains the same brilliancy, contrast and quality throughout the picture. The gauze reduces the exposure and varies the contrast; graying the shadows, reducing the brilliancy of the high-lights, distorting the brighter points of light into innumerable little crosses of halation conforming to the mesh of the gauze. The soft-focus lens is pleasing, but limited to the one type of work.

The matter of backlighting a woman's hair with a reflector is brought up by another amateur who wants to know what type of reflector is best suited for such a problem. The type of reflector depends upon the hair. For example, an ordinary mirror is the best reflector to use in cases where the subject has brilliant, fiery red hair; also for a golden blonde. But a softer reflector should be used for a distinct brunette. I would suggest, as a home made affair, that you use a reflector painted with a dull white or a dull silver paint. For a chestnut brown head of hair or an ordinary blonde, use a reflector with a glossy finish, or one covered with tin foil.

While on the subject of reflectors, let me add that wise use of reflectors will be a distinct aid in securing better exterior pictures. Reflectors are easily made. Just use a square of light wood, or beaver board, size according to what you want—I would suggest three feet high by two and one-half feet wide. For a soft reflector paint it with dull white or dull silver. For a hard reflector paint with glossy white enamel or

cover with tin foil. These are a remarkable aid to good exterior photography. One of the most comprehensive articles on the use of these reflectors is found in the March issue of the AMERICAN CINEMATOGRAPHER, 1932. It was written by Charles Clarke, one of Hollywood's best known cameramen.

One amateur wants to know how to get the effect of reversed action with his camera which has no reverse mechanism. All that is necessary to get the reversed effect is to turn your camera upside-down and shoot your scene that way. When the film comes back from the laboratory cut out the scene and resplice it in with the rest so that it is "heads-up" with the other scenes and on the screen the action will be reversed.

"I want to try some of the back-lighting effects I see in professional films, but the instruction book says never to make a picture except where the light comes over your shoulder. Is there any special device the studio cameramen use to get such effects?" asks another amateur.

You can get the effects you speak of with any amateur camera if you use a lens-hood or sunshade on your camera, and if care is taken that the direct rays of the sun do not strike the actual lens surface. In back-lit shots the light should come from behind and slightly to the side of the subject, and if exterior, the best results are obtained when the sun is fairly high in the sky. Of course you should use a reflector to illuminate the shadowed side so the detail will not be lost there.

An amateur from Boston asks—"To what extent does the elevation of a camera affect the horizon distance?"

Obviously, a man on level ground can only see a few miles, but at 3000 feet one can survey a 58-mile circuit, and at 6000 feet one of more than 165 miles. The Army's figures for relative visibility are: 10 feet, visibility 6,800 yards; 100 feet, visibility 21,500 yards; 300 feet, 37,300 yards; 500 feet, visibility varies between 48,200 yards and 52,100 yards. If the object viewed is 25 feet high these figures are increased to respectively 17,500 yards, 32,200 yards, 48,000 yards, 59,900 yards, and a maximum (due to refraction) of possibly 63,700 yards, or more than 30 miles.

And now comes another gentleman who wants to know how to determine whether a lens is negative or positive.

Perhaps the simplest test is to hold the lens at arm's length and rotate it in a plane at right angles to the line of view. If the image seen through it seems to go OPPOSITE to the hand's motion the lens is convex, or positive. If it does not move, there is no lens action. If the image goes WITH the motion, the lens is negative. Also, the negative lens will not throw an image on a screen as a positive lens does.

An amateur from Seattle asks us if it is necessary to correct exposure for increased altitude. Yes, this correction should be made for the best results. A good rule to follow is to give normal exposures below the 4000-foot level; from there to around 5000 feet three-fourths normal; and from 5000 feet to well over 6000 feet half normal. Exposures must be further reduced if snow or large bodies of water figure in the picture to any great extent; and still more if immediately after a rain-storm or snow-storm when the air is usually free from dust particles. We recommend Panchromatic film and filters for all high altitude cinematography, and as the light conditions are more than usually deceptive, an exposure meter really should be used for accuracy. Incidentally, an exposure meter is a valuable instrument for any amateur.

Shadows

by **GEORGE W. HESSE**

IN PHYSICS we have a law which states that "Every action must have an equal and opposite reaction." We might profitably study this law and modify it somewhat to broadly fit the subject of cinematography and more specifically, of lighting. Applying it to this complex problem we would say "Where there is light there must be shadow."

Some such law might very well be the cornerstone upon which all lighting is built. Without shadow we could not get very far in producing pictures with any pictorial or realistic pretensions.

Look about you and notice what an integral part shadow plays in identifying any object. Without shadows things appear flat and all on one plane. In a shadowless world we would not be able to judge distances accurately. Nor would we be able to judge form. Take a sphere for example. We differentiate between a sphere and a flat circular object of the same size by the fact that the sphere has a certain amount of shadow under it and also by the fact that the intensity of illumination on the sphere falls off and becomes progressively more shaded as it approaches the horizon while the flat object, being on one plane, is of one even intensity of illumination.

Shadows are strange intangible things. You can see them and produce them but you can't feel them. They are as real as the objects casting them yet they have no substance. You can never disassociate a shadow from the object casting it. Which is rather fortunate, for the shadow plays a vital part in the representation of an object.

Take any object, say a chair, a book, a vase or anything and flood it with light of an equal intensity from every angle so as to wipe out all shadow. What a flat, lifeless thing it is to look upon. It does not seem to be resting on anything . . . why it almost appears to float in space.

True every detail stands out as clearly as every other detail. No one detail is any less prominent than its neighbor. Such a lighting would be admirable for record purposes perhaps but would have absolutely no application to pictorial usage.

It should be understood that by shadow is meant not only the shade which one object casts upon another but also the shading of the various planes of the object itself . . . as in our example of the sphere. It is the treatment of light and shade in a picture that the artist, a fussy fellow, calls *chiaroscuro*, a word which I prefer doing without.

Let us first consider light as it occurs in nature. The natural source of light is, of course, the sun. Its rays strike an object after passing through various diffusing mediums such as the atmosphere, clouds, haze, etc. Other rays are reflected back to the object from the ground, clouds, sky and other objects. It is these rays which illumine the shadows which would otherwise be black. However, reflected light is never so strong as to equal direct light.

The balance between the direct and the reflected light continually varies in nature as the time of day, season and atmospheric conditions vary. On a bright day the balance between the highlight portion of an object, that part illuminated by direct light, and the shadow portion, (the portion illuminated by reflected light) is extreme and we say the range of contrasts is great. At such a time we are hard put to secure a faithful rendering of an object, especially if it be rather small, as would the head if we were making a portrait. On a cloudy day the range of contrasts is slight for then the majority of the illumination is by reflected light and the balance between the highlight and the shadow side is nearly even.

A useful instrument to determine the range of contrasts is the monotone filter. This is a purely visual filter and cannot be used photographically. By holding it to the eye and looking through it you can determine just about how the scene will photograph, where the shadows will fall and about the range of contrasts between the highlight and the shadow portions. It will show, in monotone, how the various colors will photograph. For this purpose there are two types, one for use with panchromatic emulsions and the other for use with orthochromatic emulsions.

Since our natural source of light is above us we have accustomed ourselves to that condition. Shadows falling other than below an object would be, to our eyes, unnatural.

Thus when we must light a scene by artificial light we attempt to mimic nature as closely as possible and our main light sources are placed quite high. For this reason, in portrait work, the basic and most natural looking light source is that which strikes the head at an angle of 45 degrees.

The importance of shadows cannot be underestimated. In portrait work they have long been given their proper importance and the way they are handled determines whether one is producing a character study of the sitter or just another photograph.

When photographing women they should be done so beautifully. The lighting should be in a high key and aim to express femininity. The tonal range between the highlight and the shadow should never be very great.

The lighting for men on the other hand should express rugged virility. The tonal contrast should be much longer than that employed for women. In fact it should be more or less contrasty without being violent.

The problem of securing depth in our pictures has long been a perplexing one. The proper study of shadows will lead to a partial solution in securing the so desirable pseudo-stereoscopic quality aimed at. Is of course cannot produce true depth but merely an illusion of depth.

We can secure the necessary illusion by contrasting the planes of the scene. For example a brightly lit foreground, against a shadowy middleground which in turn is contrasted against a brightly lit background will create an illusion of depth.

Shadows of objects in the scene such as chairs, tables, lamps and the like will also aid in maintaining this illusion. The shadows of course help separate the objects from their surroundings and aid us in realizing that the objects are not all on one plane.

Permitting shadows to go wild is responsible for more dull and unimaginative photography than any other one factor. It seems rather foolish inasmuch as we have such excellent means of controlling shadows by those handy little accessories, reflectors.

In outdoor work especially can we find scores of uses for reflectors. A pretty little wooded dell or a ravine which seemed so interesting to our eye when seen on the screen looks dull and flat.

What happened to it . . . why didn't the screen image impress us the same way that the actual scene itself did? When we actually saw it we did so in its natural colors and we saw color contrast which livened up what was really nothing but shadow with very little tonal contrast. We did not secure the same color contrast on the screen, hence the result fell flat.

(Continued on Page 50)

Optics of Projectors for 16 mm. Film

by **A. A. COOK**

Bausch & Lomb Optical Co.

THE fundamental requirements of apparatus designed to project motion pictures from 16 mm. film are too well known to need any detailed description. The apparatus must be compact and light, and the number of adjustments necessary to operate it should be reduced to a minimum. As an optical instrument it ought to produce a clearly defined image on the screen. It is also obvious that the location of the optical elements and their relation to the light source must be exactly maintained if maximum illumination is to be consistently secured.

Projection optical systems consist of a source of light, a collective system for directing the light through the film gate, and an objective lens for imaging the film upon the screen. Let us first consider the light source. The advantages of tungsten lamps are evident from the requirements already outlined. They are small in size, easily located in a fixed position, and require a minimum of adjustment during operation. Several filament designs of high efficiency have been developed with parallel coils arranged to fill a rectangular space about two-thirds the size of the film gate opening. The spaces between the coils are of approximately the same width as the coil, this arrangement permitting the use of a spherical mirror behind the lamp to image each coil in the adjacent space. This adds to the efficiency by heating the filament and gives the unit nearly the appearance of a solid source. By doubling the useful angle of radiation in this way an increase in illumination of 50 to 75 per cent is obtained. The exact amount depends on the quality of the mirror and the position of the filament supporting wires.

The filament housing is a tubular bulb $1\frac{1}{4}$ inches in diameter. This size has been adopted as standard for 16 mm. equipment, although it may not prove sufficient for the continual demands for higher wattage.¹ Bulb diameter is an important dimension from the optical point of view. The efficiency of the condenser and reflector depend on the angular size of the cone of light that they can take in from the source and transmit through the system. A shorter distance between filament and condenser would be helpful, therefore, in that it would permit a larger angle to be used by a condenser of given diameter. Lamp manufacturers have been working on this problem, as is shown by the fact that in some of their recent designs the filament has been offset to a position well forward

The collective system may be either a condenser or a reflector. Both methods have been applied to the illumination problem in projection, but more space is required by a reflector, for the same useful angle of radiation, than by a condenser with rear mirror. Therefore, the condenser has been the preferred form in 16 mm. machines.

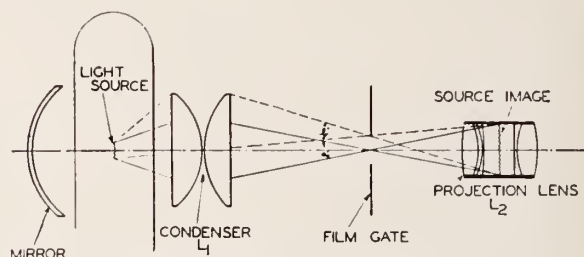


FIG. 1a. 16 Mm. optical system, showing illumination at margin of film.

The function of the condenser is a subject that has been thoroughly analyzed and presented before this Society.² Only an outline will be given here of the working of this element of the optical system as it applies in this special case. If a solid source of light of sufficient size and uniform distribution could be placed at the film gate, no condenser would be needed. A tungsten filament is not solid, however, nor can a lamp bulb be placed at that point. By using a condenser a source image is substituted for the source itself; by locating the image in front of the film plane the unevenness of the source can be equalized. Fig. 1 is a sketch showing the condenser in its relation to the other parts of the system. The condenser, L₁, produces a magnified image of the filament of such size as to fill the projection lens, L₂. In doing this it takes in the large angle of radiation marked a , and forms the image at a smaller angle a' . The radiation can now be transmitted through the projection lens L₂, as a result of this change in its direction. In this way the condenser makes useful the radiation from a small source through a large solid angle in space. Otherwise, a very large source would be needed to produce the same effect.

There is a very definite relation here between the size of the source, the size of the projection lens, and the focal length of the condenser. All the parts of the optical system are interdependent in this way, and proper proportions must be maintained to obtain maximum efficiency of the whole unit. The conditions determining the diameter of the condensing lenses are shown in Fig. 1a. Two solid lines drawn from the extreme edge of the effective lens opening to the center of the film aperture form an angle a' . The broken lines in the same way determine angle b' at the margin of the picture. These two solid angles, a' and b' , must be equal in size and must be filled with light in order to get the best possible illumination at the corners of the screen. This means that the condenser should be large enough to furnish light through all of the angle b' . This condition is usually not perfectly fulfilled in practice. A 15 per cent decrease of illumination at the margin is commonly accepted as satisfactory.

Condensers constructed according to these specifications are still found to differ considerably in efficiency, due to differences in their correction for spherical aberration. This is a well-known defect, found in all simple lenses, that causes in this instance a loss from the marginal portion of the light beam

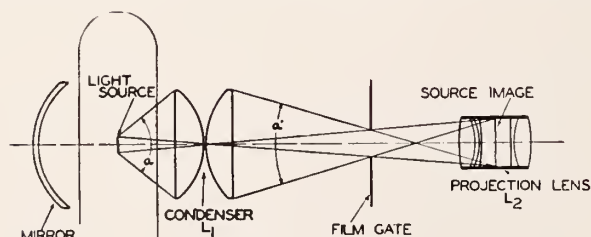


FIG. 1. Projection optical system for 16 mm. film.

of the center of the bulb. This change provides a mechanical advantage which can be especially useful in the 16 mm. projector. Condenser design has often been handicapped here by the limited space available. An increase in the diameter of the mirror will be necessary, of course, for its distance from the filament has been increased. There is more room behind the lamp, however, and this slight change can be easily made.

as it is converged to the image point by the condenser. The loss is not so serious in 16 mm. projection systems as in cases where the source image is located at the film gate. It can be corrected to a large extent by proper condenser design. The use of aspheric surfaces is one effective method, this kind of correction having been found to result in screen illumination 15 per cent greater than that obtained with the ordinary plano-convex condenser lenses.

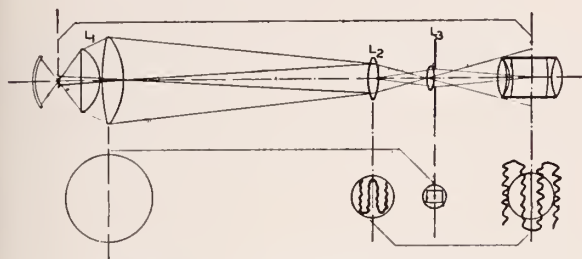


FIG. 2. Relay condenser. Conjugate images are connected by brackets.

The relay condenser is a more complex device that may prove useful with 16 mm. equipment. Its use in motion picture work is not new.² But it produces uniform illumination from a tungsten source with so little loss that it ought to be included in any discussion that deals with projection from filament lamps. As shown in Fig. 2, it is a compound lens system composed of three units. There is a condenser system, L_1 , of large angular aperture to image the source upon a relay lens, L_2 , placed a short distance in back of the film gate. The third element, L_3 , serves to form a second image of the source in the projection lens. The relay lens must be large enough to receive all of the source image, and of such focal length as to form a reduced image of the condenser at the film gate. Note that it is the evenly illuminated condenser surface, not the source, that is imaged on the film. This accounts for the uniform screen illumination produced by the system. It is 40 per cent more efficient than plano-convex condensers. The extra length of the unit, amounting to six inches over all for a 16 mm. outfit, is a decided disadvantage. But if it ever becomes necessary to build a special type of projector for school or auditorium use, this method of illumination should be of great service. It can be constructed to work with a small source, and provide sufficient magnification to fill larger projection lenses than any that are now used in 16 mm. work.

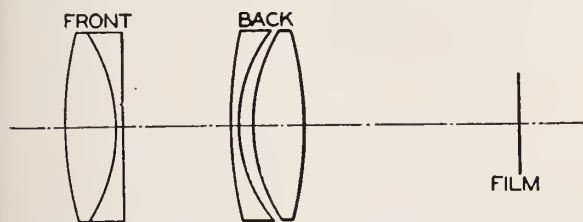


FIG. 3. Projection objective of Petzval type.

The projection objective is the third important part of the optical system. Two-inch focus lenses of $f/2.0$ are standard equipment at the present time on practically all projectors except those designed for use in cabinets. They must be well corrected for this large aperture, but the field to be covered is so small that the requirements can be met without difficulty. There are many types of lenses that could be used. In any such situation the cost element is bound to be a decisive factor, and it has operated in this case to select the least expensive lens that can be made to do the work. Before discussing the details of this particular lens construction, it would be well to consider the original from which it was derived. This lens form, shown in Fig. 3, is Petzval's portrait objective. It has

undergone modification many times, but is still the formula most often used for projection work. It can be very precisely corrected for the small field required, and has a light transmission, in short focal lengths, of 73 per cent.

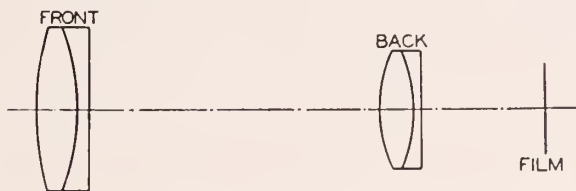


FIG. 4. Projection objective with short back focus.

Fig. 4 shows the modified form that is now used in so many 16 mm. projectors. Note that the two rear elements have been cemented, and that the spacing between front and back has been increased to nearly twice the length of the original construction. The first change, by eliminating two air-glass surfaces, increases the light transmission to 81 per cent; the increase in length has the effect of shortening the back-focus of the objective. This means that the rear element can be made smaller in diameter without sacrificing in light transmission, and that it has more space in which to converge the beam of light from the film gate. The rear element thus acts as a collective lens for the system, which results in the practical advantage that objectives of this construction, of any focal length, can be used interchangeably on a projector without alteration or adjustment of the condensing system. The only disadvantage of this short back-focus objective is that it has a slightly curved field. This defect is noticeable only in critical tests, however, and would be difficult to detect in practical use on a projector, with moving film as a test object.

Fig. 5. The filament image as it appears in the projection lens.



The final screen illumination produced by a 16 mm. projection system depends on the effectiveness of the four elements that have been described: the light source, the rear mirror, the condenser system, and the projection objective. Increases can be obtained by using a brighter source, by improving the condenser correction, and by increasing the aperture ratio of the entire optical unit. Recent attempts at improvement in the 16 mm. field have been mainly directed toward the light source, and this choice is a logical one for the equipment manufacturer because it involves the least amount of redesign on his part. To meet this demand lamps of greater brightness have been developed, the increase being due to the use of larger wire size in the filaments operated at a lower voltage than previously used.¹ The possibilities here are beyond the field of optics, and must be left to the electrical engineer.

There are two points about lamp filaments, however, which are of optical interest. One is the fact that filament supporting wires cause illumination losses unless they are placed outside the angular field of both the condenser and the rear mirror. The second concerns the filament itself. The aperture of a projection system must be filled with light if it is to work at its best efficiency. With a filament lamp, the source acts as a discontinuous surface, and the openings in its area cause a real loss of light. This effect is shown in Fig. 5, which is a photograph of a 4-coil tungsten filament and its mirror image,

(Continued on Page 50)

Amateur Movie Making

(Continued from Page 34)

continue our example: if we want to show Uncle Bob going from his house to the same cigar-store, it is wisest to show him going from right to left, in contradistinction to Father's left-to-right progress. On the other hand, if Mother learns of Father's escapade, and decides to follow her errant spouse, she, too, should go from left to right.

In the same way, if an actor leaves a scene from one side, he should re-enter it from the same side; but if the scene is changed, he should enter the new scene from the opposite side from that at which he left the preceding one. He may have done anything or nothing at all between the two scenes—but as long as he was not shown doing them, he must obey these conventions of cinemotion. To hark back to our imaginary story: since Father left the house scene from the right, he must return to it from that side, and enter the drug-store scene from the left.

Tempo

I have discussed "tempo" with many directors, cinematographers and actors: they all agree that it is one of the most abused words in the cinematic vocabulary. In its proper application, it means the physical pace of an action or scene. Obviously, in our imaginary sequence it would be incongruous to show Father in one scene walking, in the next running, and again walking slowly in the third. So, Father must walk at a fairly steady pace throughout the whole sequence—unless some new dramatic element enters to change his pace. But suppose that on his way to the drug-store, he meets a friend who tells him that his office is on fire, then he will have a definite reason for running in all the succeeding scenes.

Changes of tempo can be used with good effect to bridge lapses of time, or changes of scene. Suppose we want to show, without expending too much footage, a person or group climbing a mountain or covering a great distance—and that the actual climbing or hiking is not the important thing in our minds, but that it must nevertheless be established: we can do this in two or three shots; first, starting blithely on the climb, swinging along energetically; second, close to the end of the climb, dragging slowly along, looking tired and mopping his (or their) brow. Contrasted tempos can also be used to indicate a rising or falling curve of emotion. Suppose that in place of the drug-store, it is the neighborhood speakeasy that Father is going to; and in place of Mother, let us use a raiding-squad. We can create quite an emotional effect by merely contrasting the tempos of Father's deliberate walk with the speeding police-car. Rightly done, such a sequence can build to a fine level of suspense: but it must be done expertly, for too many incompetent professionals have bungled it since Griffith first used it. Still, that is the way with most emotional tricks: properly handled, they are legitimate dramatic effects; overdone, or bungled, they make for comedy.

Timing

Here is a point that at once reveals the competence or incompetence of the director. How is each person's action spaced—or timed—with relation to the action of the other players? How are entrances and exits made?

Returning to our original example, let us suppose that Father reaches the drug-store, and is overtaken by Mother. How is she to enter the scene? The answer depends upon the effect we want to produce. Is she to surprise the audience, or is she to surprise only Father?

In either case, let us suppose that there are several people standing or walking about in front of the store. This will be natural, as well as dramatically useful. Now, if Mother is to enter surreptitiously, and pounce suddenly upon her errant spouse, she can do it in two ways. If she is to surprise both the audience and Father, she should enter the scene unobtrusively, near the rear of the scene, and pass behind the

various "extras," coming suddenly forward to reveal herself unexpectedly to both the audience and Father. If, on the other hand, the audience is to be given an anticipatory chuckle, she should enter near the front of the scene, and pass in front of the "extras," for in a picture the commanding position is always that nearest the camera. In this case, she could hardly help being noticed by the audience. If it is desired to make her entrance immediately noticeable, but not so important as what she does after reaching Father, she should enter fast, and rush across the picture (crossing in front of everybody else) to Father. But if we want to attract the maximum attention to her entrance itself, she should stop for a moment, just as soon as she is well into the picture, and pause for a moment before hurling herself across the screen at Father. In extreme instances of broad comedy, she might, just after her pause, and just before rushing at Father, gesticulate wildly, though this is rather an obvious exaggeration. The pause, however, is important: it is like the moment's rest just before a crashing chord in a symphony: it focuses the attention on Mother, and heightens the effect of whatever action is to follow.

Timing is vital in scenes played by two or more players together, whether the scenes be played in intercut, individual close-ups or in a longer shot showing all the players. Acting is far more than merely action: it is a matter of action and reaction. As Conrad Nagel once said to me, "The best definition of acting and timing of action is Joe Jefferson's: 'When I talk, you listen; when you talk, I listen'." This sums up the whole secret of acting, for movement on the part of the player who, for the moment, is of secondary importance, will kill the scene, no matter how great the other player may be, nor how fine his acting in the scene may be."

Therefore, in our example, we must first decide whose scene it is to be once Mother reaches Father. If it is to be her scene, Father must not move too much after once registering his surprise; but if it is to be his scene, she should "freeze" while Father, as the saying is, "takes it big." This is an extremely difficult thing to manage with amateur actors, but it is too vital to neglect, for it marks the difference between an amateurish, home-made-appearing production and a smooth, finished picture. No matter what the scene may be, remember that it must as a rule be dominated by one or the other of the players. Decide whose scene it is to be, and direct it accordingly. Make the player who for the moment is of secondary importance realize that it is the other fellow's scene, and keep him from queering it. Give time for action and reactions, with brief pauses between to enable the audience to keep up with you, speed the action and reaction according to the tempo you have set, or wish to keep—and your scene, your sequence, and your picture will be all right.



Many Features Scheduled

INDICATIONS at the moment are that more than five hundred feature productions will be made in Hollywood for the 1932-33 season. Approximately four hundred of these will come from not more than ten of the big producing companies, according to a checkup of the announcements from the various studios. More than one hundred are expected to come from the Independent producers who this year have one of the finest opportunities they have had in many years to place their product upon the market.

RKO-Radio is lining up a production drive in which executives are planning to launch fourteen feature productions within the next three months. David Selznick, production head, has announced that there will be no summer let-down, and that production will continue at high speed. From Universal comes the announcement of a production schedule that will run into many millions of dollars, and most of the major studios have approximately forty pictures on the schedule for delivery.

AMATEUR Club Activities

Los Angeles Amateur Club

A PROGRAM of unusual interest was furnished the members of the Los Angeles Amateur Cine Club at its May meeting held on Monday evening, May 9th. William Stull, A.S.C., associate editor of this magazine, prepared a special reel for the meeting, showing just what can be done by the amateur if he uses filters. It was quite a remarkable reel and gave much valuable information to the club members.

An added feature was the showing of a 35 mm. short feature which was furnished by the RKO-Radio studios, through the courtesy of Lloyd Knechtel, head of the special effects department of the studio. The picture was called "Humanettes," and was trick photography in its entirety. Mr. Knechtel, who photographed the picture, was on hand and told the members just how the picture was made. The meeting was held in the auditorium of the Hollywood Citizen-News, under the auspices of the camera department of the Hollywood Citizen Store. Mr. Ray Sebastian, head of the camera department, acted as host, and topped off a fine evening's entertainment with a buffet lunch.

Amateur Players

THE Amateur Players, Inc., of Bayonne, N. J., are now at work shooting a comedy, tentatively titled, "All Wet That Ends Wet," which will be entered in the \$1000.00 Amateur Movie Making Contest that is being conducted by the AMERICAN CINEMATOGRAPHER. The scenario was written by Paul Homer Kitchen. Bruno Tarzia will handle the photography. Alfonso Squeo is president of the club.

Boston Cinamateur Club

ALTHOUGH only formed last January, the Boston Cinamateur Club, with headquarters at West Somerville, has thirty-two members, and is adding more rapidly. T. H. Patten is secretary of the club, which is the only one in Eastern Massachusetts.

Greenbrier Amateur Movie Club

HAL MOREY, secretary of the Greenbrier Amateur Movie Club, of White Sulphur Springs, Va., writes us that the Greenbrier club is planning to enter a picture in the Amateur Movie Contest of the AMERICAN CINEMATOGRAPHER. This is one of the most active clubs in the East, having a membership of 62, although only organized shortly after the first of the year. An interesting bulletin, "The Spotlight," is published by the club. A mystery drama, "The Black Door," has just been completed by the club members, photographed by Mr. Morey. Very favorable reports have been made regarding it.

Northeast Amateur Club

MEMBERS of the Northeast Amateur Motion Picture Club, of Philadelphia, are at work on a production, "Dr. Ricco," which is being filmed from an original story by C. J. Webster, Jr., president of the club.

Star Feature Art Film League

A PRODUCTION, "Hansel and Gretel," is now under way in the Star Feature Art Film League of Arlington, N. J., with the photography in the hands of Edward J. Hayes. Rachel Caputo is directing and H. E. Rathbun is in charge of lighting.

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Prices: 400 ft. Features, \$15.00

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AMERICAN CINEMATOGRAPHER

\$1,000.00

Amateur Movie Contest

In addition to the four cash prizes, announced on the opposite page, the following prizes will be awarded by various equipment manufacturers and dealers:

The BELL & HOWELL COMPANY will also present two equipment prizes—First, a choice of a Filmo 70DA Camera, listed at \$280.00, or a Filmo Model J. L. Projector, listed at \$298.00. Second, a choice of any Standard Cooke Telephoto Lens, priced from \$60.00 to \$95.00. To be given to prize winners who made their pictures with a Filmo. The EASTMAN KODAK CO. will present a Model K Cine Kodak, with a f. l. 9 lens, complete with carrying case, priced at \$150.00, for the finest example of photography in an out-of-doors picture regardless of whether it wins a cash prize or not and without consideration of story subject. MAX FACTOR MAKEUP STUDIOS will present one of the famous Max Factor Make-up Kits, completely equipped, to the winner of first prize of \$500.00. HOLLYWOOD FILM ENTERPRISES, INC., offers a Model B Cine Voice, Home Movie Talking Picture Machine, complete with carrying case, priced at \$129.00, to be given to that person or Amateur Club, located in California, who enters the best 16 mm. or 9½ mm. picture from California, regardless of whether the picture wins a cash prize or not. In other words, the prize goes to California's best entry. This home talkie equipment may be attached to all projectors, either 16 mm. or 35 mm. It makes any projector a talking picture machine. HOME MOVIE SCENARIOS, INC., offers two prizes as follows: To the winner of first prize of \$500.00, one Scenario (choice of entire group), one H.M.S. Matte-box, choice of any H.M.S. Filter, and one H.M.S. Scene Slate. To the winner of second cash prize of \$250.00, one H.M.S. Matte-box and choice of any H.M.S. Filter. In case the picture winning first prize is made from an H.M.S. Scenario, an additional cash prize of \$100.00 will be paid by Home Movie Scenarios, Inc. If second prize is made from an H.M.S. Scenario, an added prize of \$50.00 will be awarded; and an added prize of \$25.00 will be given winner of third prize if made from an H.M.S. Scenario. METEOR PHOTOLIGHT COMPANY will present the winner of FOURTH cash prize the following valuable lighting equipment: A Meteor Double Photolight complete with two 500 watt NERON bulbs, retail price, \$30.00, a Meteor Photolight Tripod model, complete with NERON bulb, retail price, \$18.00, and a Meteor Photolight Table model, complete with bulb, retail price \$13.50. Value of prize, \$61.50.

AND—MORE PRIZES WILL BE ANNOUNCED

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. ¶ A total of **\$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of \$500.00 for what its judges consider the best 16 millimeter or 9½ millimeter picture submitted in this contest. \$250.00 will be given as second prize; \$150.00 as third prize; and \$100.00 as fourth prize, a total of \$1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after

the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9½ millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg., Hollywood, Calif.

Enclosed please find Check, or Money Order, for \$3.00 (\$4.00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year:

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It is understood that this subscription makes me eligible to enter your \$1000.00 Amateur Movie Contest.



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Anderson Now Manager

THE active management of the Mitchell Camera Corporation of Hollywood has recently been taken over by Mr. Stanley S. Anderson of Beverly Hills, California, who has acquired a substantial interest in this corporation. Mr. Anderson is well known in the local financial center.

The Mitchell Camera Corporation will continue to operate as it has in the past with no change in personnel, with Mr. George A. Mitchell, technical engineer, in charge of research and plant activities. The corporation will continue its program of development and with recently added equipment is now in a better position to serve the industry than heretofore.

The Mitchell Camera Corporation according to announcement by its executives, is an independent corporation and is not affiliated with any other company, and no licenses have been granted for the use of its patents.



Relative Values of Sound and Color

(Continued from Page 10)

It must be repeated, however, that the imperfections of sound and especially color renditions in this new art have been and are so far a serious handicap to properly employ sound and color synaesthesia to motion pictures.

At the same time, the author feels that scenario writers, directors, art directors and composers or music directors should not neglect to include into their cooperative efforts a study of this little known physio-psychological human property of synaesthesia.

The present decline of public interest in motion pictures is spurring all producing agencies throughout this industry into well nigh desperate efforts to increase so-called box office values, which are nothing else but the automatic reaction of the public to satisfactory and rising entertainment values and sense pleasures.

Every element contributing to such favorable public reaction must be, therefore, studied, and if possible employed and it is for this reason that this short analysis of synaesthesia is offered to the motion picture industry at large for consideration and study and don't forget, "You can and do see a tone and hear a color."



Australia Launches Multi-Lingual Films

GREATER Union Theatres, Ltd., of Sydney, Australia, has signed a contract with Captain Frank Hurley, the cinematographer who made "Pearls and Savages," "Southward Ho with Mawson" and "Siege of the South," to produce a series of pictures for world-wide distribution, necessitating the recording of the accompanying dialogue in various languages. The first multi-lingual to be made in Australia will be entitled "Pearl of the Pacific," an educational film on the Lord How Islands. Also scheduled for early production are "Symphony of Steel," showing the opening of the Sydney Harbor bridge, and "From Tropic to Antarctic."



Stars Are Keen Fans

MOST of the famous screen stars are like the postman who takes a walk on his day off, it is indicated by latest returns in the Hays motion picture preference poll, which shows that film celebrities are among the most ardent movie patrons of the country. They attend, not only to see themselves as others see them, but for entertainment and relaxation

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HOLLYWOOD

CALIFORNIA

Far Afield



W. E. Smith

WE OF Hollywood are prone to forget that there are pictures being made in other sections—sometimes pictures that are very unusual and pictures that require as much skill as any made in the studios where we have every facility at hand. Some of us might be very much surprised if we knew just what is being accomplished by cameramen in the far places, working, many times, with rather ancient equipment and under trying conditions.

The writer has just received word from Eddie Blackburn about one cameraman who is doing real things away up in Seattle, Washington. He is Wm. E. Smith of 2423 Federal Avenue, Seattle. Mr. Smith has recently completed an unusually interesting picture of Washington wild life for the State Game Commission. A total of 7500 miles was covered by Mr. Smith in making this picture. With a game warden, he started out from Seattle and crossed the Cascades by Snoqualmie Pass. Elk were photographed on that leg of the trip. Deer were shot in the northeastern section, in Stevens and Pend Oreille counties. Bird life was photographed in central Washington. There what is believed to be the first 35 mm. pictures of sage hens "strutting" in their natural haunts, were made. It took five days to get 150 feet, due to the fact that the birds strut only at the break of dawn. Mr. Smith says that the Eastern supersensitive film solved the problem there. Wild duck and all kinds of birds found in Washington were also photographed. The Game Commission wrote Mr. Smith that all the members were highly pleased with the film.—H.H.

Optix Reorganizes

REORGANIZATION and expansion of the Optix, Ltd., Corporation, manufacturers of the Optix-Debie single system recording equipment has just been announced.

Removal of the corporation headquarters from Inglewood to Hollywood and an inclusion of the Len Roos 16 mm. sound on film equipment, together with certain highly specialized medico-electric equipment, comprises a part of the new set-up.

Len Roos remains as chief of the technical staff, with Milton Anderson as general manager. The Board of Directors is made up of men of high professional ability.

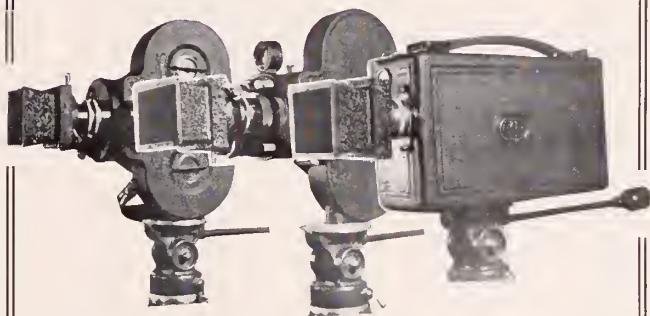
Since the first announcement of the availability of the Optix-Debie single system was made in this magazine two months ago, business contacts with more than twelve foreign countries have been made as well as a wide spread American market. World sales are in the hands of Harold S. Ryerson.

Professional Effects

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SUNSHADE, MATTE BOX
and **FILTER HOLDER***and* **HARRISON**
H. M. S.
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Professional Quality 2" Square Color and Effect Filters

Much of the beauty of professional films is due to the use of special color and effect filters which, although commercially available, could not be used with 16 mm. cameras for want of a proper filter-holder. The H. M. S. matte box takes the standard professional two inch square glass filters. These provide not only the more familiar color-correction of the well known "K-series" of yellow filters, but also a wide variety of special effects, such as moonlight and night effects, fog effects, diffusion, and light and dark iris effects that have hitherto been impossible for the amateur cinematographer. The H. M. S. matte box is designed to take two of these filters simultaneously, permitting many combinations of color-correction and diffusion, color-correction and special effects, etc.

The H. M. S. matte box will fit any standard 16 mm. camera. It is mounted directly on the lens, and held in place with set-screws and special fittings, so that while in use it is rigidly in place, but instantly detachable. It can likewise be fitted to a number of semi-professional 35 mm. cameras, such as the Eyemo, de Vry, etc., and to still cameras whose lenses do not exceed 1 1/2 inches in diameter. **It is important, in ordering, to inform us as to the camera, lens-equipment, and lens-mounts with which the matte box is to be used.** Price \$7.50. A small extra charge is made in cases where the matte box is to be used with more than one lens, or where it is to be fitted to 35 mm. or still cameras or special lenses.

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Cinecolor Starts

ANNOUNCEMENT that the laboratories of Cinecolor Inc., are on a production basis for the processing of both 35 mm. and 16 mm. motion picture film has just been made.

The Cinecolor Corporation represents a coalition of experienced technicians and modern equipment designed to meet the needs of both the professional and 16 mm. projection field.

An adequately equipped professional laboratory is prepared to deliver both 35 mm. and 16 mm. color prints, an announcement which should be of vast importance to the whole motion picture industry. The Cinecolor process embodies the best features, heretofore recognized as a part of the "bi-pack" system, with new and improved color print methods. The present plant capacity is in excess of 1,000,000 feet of prints per month, uniformity of release prints is guaranteed by those in charge.

The general management of Cinecolor is in the hands of A. L. McCormick, whose experience in the field is of years standing. The technical staff is headed by William T. Crespinel, who until recently held a similar post with Multicolor. Associated with Mr. Crespinel is William V. D. Kelley, whose name has been associated with the development of color processes for many years. Mr. Kelley is also chairman of the color committee of the American Society of Motion Picture Engineers.

The company is further fortunate in the association of Roy Hunter as a member of the Board of Directors. Mr. Hunter, as technical chief of the Universal Laboratories, needs no introduction to the industry.

Sales, advertising, and studio contacts will be handled by Harold S. Ryerson. Mr. Ryerson has had several years experience in the color field in this capacity.

Ralke Heads Victor Animatograph Corporation's West Coast Branch

CH. RALKE, well known in the 16 millimeter field, has been appointed in charge of the West Coast Factory Branch of the Victor Animatograph Corporation, manufacturers of the Victor cameras and projectors, whose main office and factory is at Davenport, Iowa. Mr. Ralke's headquarters are in Los Angeles.

While so many are talking about the depression and poor business conditions, Ralke smiling reports that business is rapidly speeding up, and predicts a continued upswing in the 16 millimeter field. Ralke for some time was in charge of the 16 millimeter sales for the National Theatre Supply Corporation in the California field.

Detroit Studio in Tieup With 3 in Other Cities

METROPOLITAN Motion Picture Co., of Detroit, producers of industrial films under RCA Photophone license, has become associated with the Atlas Educational Film Co. of Chicago, the Alpha Motion Picture Co. of Cleveland and the Aeolian Co. of St. Louis, Mo. Each company retains its identity, but the four will cooperate on sales and production. Metropolitan recently moved into its new two-story building on East Grand Blvd.

Clergymen Advised To Boost Good Pictures

CLERGYMEN should pick out good motion pictures and advise their congregations to see them, rather than spend their time panning the bad ones, according to the conference of the Evangelical church, just concluded at Baltimore.

The conference believes that would have more effect than any calling of attention to films which have been under the censor ban.

New Perambulator and Camera

(Continued from Page 16)

telephoto shot of an existing background, or a cinematic copy of an ordinary 8x10" still picture. The two images, which are produced by the two cameras, in exact register on the single strip of film, are kept in proper relationship by matting off parts of each picture, as in ordinary glass or matte shots.

Other items in the Bell & Howell exhibit were the new motor-driven "Eyemo," the Cooke "Speed Panchro" lenses, the B. & H. -Cooke "Varo" zoom lens, Cooke "Apermax" projection lenses, which work at speeds of f:2 and more, and a set of photographs and descriptions of the new automatic sound-and-picture production printer.

The Paramount Studio exhibited one of their regular blimp-and-rolling-tripod combinations, and an ingenious "baby crane," which, though capable of passing through a 24" door, can be raised to a height of eight feet, or dropped below the floor-level.

The Educational studios exhibited their Vacuum blimp, and an unusually practical perambulator.

The Fox Studio Camera Dept. exhibited its system of using fabric rather than solid blimps.

Spindler & Sautpe exhibited the new model "Leica" camera, the familiar Leica accessories, and the new photo-electric exposure-meter described elsewhere in this issue.

The meeting and exhibit were a decided success, and reflect the greatest credit upon Mr. Miller, who organized the affair.



New Zealand Will Limit New Theatres

THE Government has found a way to check over-seating in New Zealand. That is by limiting the building of new theatres.

The authority to check theatre-building has been placed in the hands of the Minister of Industries and Commerce, who is authorized to appoint officers to control and issue licenses to exhibitors in localities where the erection of new theatres would be likely to result in "unreasonable economic waste."

These investigators will report on the normal requirements of each locality, on the quality of the films, the prices and the seating accommodations. Also they must decide whether or not the opening of new theatres would entail hardships on exhibitors already licensed.

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f:2.7

It should be welcome news to cinematographers contemplating the purchase of a wide angle lens for amateur movies that a drastic price reduction has been effected in the Kino-Hypar f:2.7. Formerly sold at \$57, its present price is \$45. This includes finder lens when required. Its speed and unusually fine corrections ideally adapt this lens for all purposes of interior, sport and panoramic photography.

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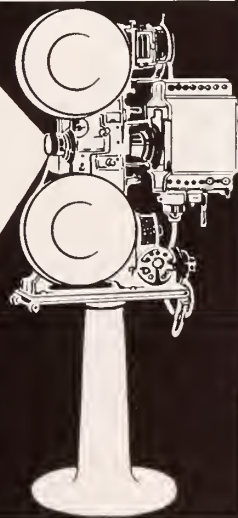
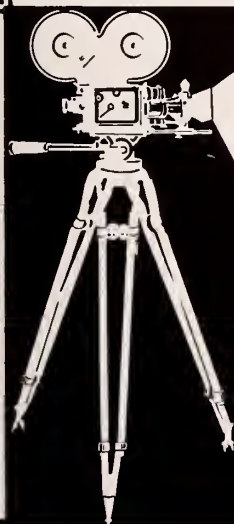
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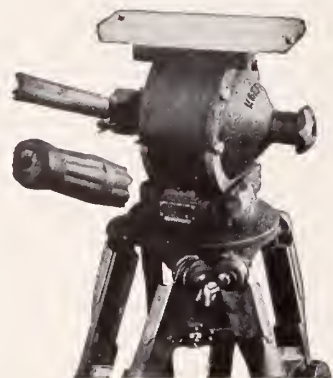
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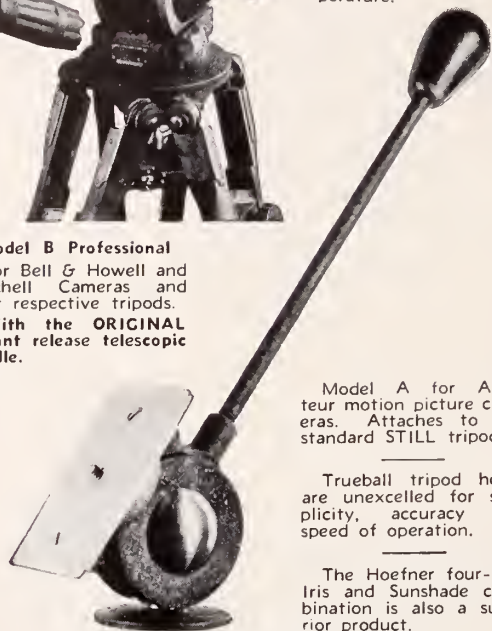
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Home Movie Fan



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Photo by Wide World Photos.



Engineering Aspects of Noise Study

(Continued from Page 12)

the Board of Transportation had us perform for it an extensive noise survey of subway and elevated lines. The study included the consideration of the type of road-bed, type of tunnel construction, type of elevated structure, type of rolling stock, etc., all with the thought that each link should be designed to achieve quiet conditions.

The noiseless typewriter is comparatively familiar to all but even it is undergoing modification to make it more silent. In talking picture work we have introduced the so-called noiseless recording to amputate the highly unnecessary scratch from film entertainment. Manufacturers of household equipment, such as electric refrigerators, have catered to the public demand by producing quiet machines.

And so on. I have tried to outline some engineering aspects of a large scale program for the elimination of noise. The program is an idealistic one but nevertheless admits of practical realization. As the parties directly responsible for bringing about improvements in material fields, engineers hold the fate of the program in their hands. They should realize the advantages of noise reduction in the way of increased comfort, health, and efficiency, and adopt as one of their fundamentals the precept of noise suppression.



England To Have Woman Director in Auriol Lee

AURIOL Lee, well known as a stage producer, is to become a picture director and will do a feature for British International at Elstree, under the supervision of Alfred Hitchcock.

In addition to her British stage experience, she has done picture work in Hollywood, both with MGM and Paramount.



Bulgaria Has 135 Cinemas

BULGARIA, according to figures made public by the Bulgarian tax authorities, had 135 motion picture theatres as of Dec. 31, 1931, with a combined seating capacity of 51,543. But 57 of the theatres are operated daily. The number of programs shown during 1931 amounted to 8,004.

S.M.P.E. Convenes

(Continued from Page 26)

(6) For a given wattage the area of the biplane staggered filament is reduced to about one-half that of a monoplane. This makes possible the manufacture of a series of line voltage projection lamps with much smaller light sources than heretofore realized.

(7) Biplane filament lamps as compared with monoplane types of the same source size present the difficulty of a greater heat problem due to their increased wattage. In order to prevent bulb bulging the temperature of the hottest spot on the bulb should not exceed 500° C.

Among the many other papers were: "The Duplication of Motion Picture Negatives," by J. I. Crabtree and C. H. Schwingel; "Short Focus Lenses for Projection With Translucent Screens," by W. B. Rayton; "Illumination in Projection Printing of Motion Pictures," by C. Tuttle and D. A. Young; "The Precise Measurement of Filter Factors and Photographic Reflecting Powers," by L. A. Jones and J. W. McFarlane; "Theatre Noise Problems," by S. K. Wolfe and J. E. Tweeddale; "Projection of Motion Pictures From Continuously Moving Film," by F. Tuttle and C. D. Reid; "Wave Form Analysis of Variable Density Sound Recording," by O. Sandvik and V. C. Hall; "Portable 16 MM. Sound Picture Systems," by H. Pfannenstiehl and R. A. Miller.

**Heading for Tibet**

IF ANY reader of this magazine happens to be the owner of a short wave radio set and will get in contact with Station A.C.8-B.G. which operates on 40 meters, or 7,000 kilocycles, he will be able to talk with a member of the American Society of Cinematographers who is now somewhere in the interior of China, headed for Tibet.

The A.S.C. man is Jack Smith. He is now with an expedition that started from Hankow, China, on April 11. The expedition has one big truck equipped with sound recording apparatus; another loaded with food, and three more carrying gas, oil, camping equipment and camera equipment. Mr. Smith has 50,000 feet of 35 mm. negative film, 20,000 feet of sound film and 2000 feet of 16 mm. film, and he expects to bring out of China pictures such as have never come from there before.

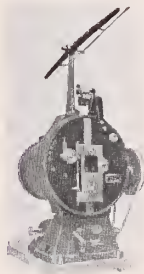
The expedition left Hankow by train. They detrained at Sian. From there the party continued overland by truck. The route followed will lead them to Sienyang, Lichnan, Kienchow, Lungte, Tsingning, Tingsi, Chinksien, Lanchow, Kulang, Liangchow, Kanchow, Soo-chow, Ansi, Kuchengtze, Urumtsi, Tikwa, Kucha, Aksu, Pachow and Kashgar. After reaching the last named city, the plan is to strike out for Tibet.

The expedition carries a short wave set and will be in daily touch with Shanghai. Any American amateurs who should succeed in picking up Mr. Smith's station undoubtedly will find much of interest to talk about. If any readers do make this connection, the editor of this magazine would be appreciative if they will write to us and pass along the news.

**France Is Asked To Subsidize Industry**

M. LOCQUIN, director of the Fine Arts budget, has proposed that the French Government shall subsidize the motion picture industry, creating a national center of production.

According to his plan, a committee composed of Government representatives, producers, film artists, technical advisers, etc., would select all scenarios and supervise all production.

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16 MM. Optics

(Continued from Page 39)

as they appear at the aperture of a projection lens. Any change that would help fill up these spaces and thus make the source more solid would mean an increase in illumination.

Improved condenser design offers a small field for improvement which is applicable, perhaps, to many of the commercial machines. Even with a perfect condenser, however, one can do no more than to fill the projection lens with an image of the light source. The brightness of the source and the effective aperture of the system then determine the illumination. Increasing the aperture offers interesting possibilities that are yet to be considered. An $f/1.5$ optical system should give 75 per cent more light on the screen than the $f/2.0$ lenses now used; experience indicates that these theoretical increases are seldom attained, however, and that a figure of 50 per cent is much nearer the probable increase. The cost element enters into this situation to such an extent that an increase in aperture is not likely to be attempted in commercial practice until all possibilities of the light source have been realized.

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¹Roper, V. J., and Wood, H. I.: "Trend of Lamp Development and Operation in Motion Picture Projectors Employing 16 MM. Film," J. Soc. Mot. Pict. Eng., 15 (Dec., 1930), No. 6, p. 824.

²Kellner, Hermann: "The Function of the Condenser in the Projection Apparatus," Trans. Soc. Mot. Pict. Eng. (Nov., 1918), No. 7, p. 44.

³Kellner, Hermann: "Can the Efficiency of the Present Condensing Systems Be Increased?" Trans. Soc. Mot. Pict. Eng. (Oct., 1923), No. 17, p. 136.

(Editor's note: This article printed through courtesy of the S.M.P.E. Journal.)

Shadows

(Continued from Page 37)

We could have improved that scene by the judicious use of reflectors. By using a hard reflector and shooting in patches of sunlight here and there it would have created the impression of sunlight filtering through the leaves and the scene would again have been interesting when seen on the screen.

Always remember when using reflectors to reflect the light in a perfectly natural manner. Never reflect it from directly below an object. From in front and but slightly below or from the side is much better and gives a more natural effect.

Shadows are a great aid in the creation of atmosphere. In pictures dealing with a tropical locale it is a common dodge. A pair of lovers are in the foreground with the background usually the white wall of a tropical building, perhaps a hacienda. On this wall plays the shadow of palm leaves or of a giant cactus. Is not this proof positive of the locale of the scene? And who is to know if the objects casting the shadows were real or card-board cutouts?

Sustaining the dramatic tone of a picture is another important role in which the shadow is cast. In comedies, love stories and other happy vehicles there is never a great contrast between the highlights and the shadows. They are always photographed in a high key with a short tonal contrast.

Melodramas on the other hand have more violent contrasts between the highlights and the shadows. The shadows are more or less dull and heavy. There is just enough detail in them to prevent them from being black.

The whole phenomena of motion pictures is based on shadows. What we see on the screen is nothing but the shadow of a positive image which happens to be on a tiny strip of celluloid in our projection machine. Let us study shadows . . . if we do we will undoubtedly be rewarded with a more satisfactory result and it will be apparent when the final shadow of all our efforts is cast upon the screen.



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MORNING! . . . Official temperature for tomorrow . . . ninety-eight in the shade (if you can find the shade) . . . Among those who are not worrying about that . . . Clyde DeVinna . . . Newest assignment for Clyde is M-G-M's "Eskimo" . . .

Advance troupe off for Alaska with a schedule that would make even Howard Hughes (Hell's Angels) take notice. With the advance guard, sailing from Seattle last week, is more than a quarter of a million feet of Eastman Supersensitive negative which will contribute much to the beauty of this pretentious production.

What the Cameramen Are Doing to Keep Hollywood on Top

Rosher to Burbank

Charlie Rosher, whose international reputation was gained through his delightful photography of Miss Pickford, has completed his first production with Miss (Constance) Bennett at R.K.O. . . . Did he click? . . . News note . . . Charles Rosher has gone to Warner Brothers-First National Studios with Constance Bennett, where he is photographing her current picture for the latter company.

Fads, Fancies and Fish

Maybe it's the strain on the sets . . . maybe it's just the dog-gone lazy weather . . . anyhow . . . fad of the minute among a lot of the boys seems to be one that calls for very little energy and pays big dividends in fun and relaxation.

Merritt Gerstad is building a mountain lodge at June Lake, 'way up in the High Sierras above Bishop . . . (where fish are FISH)

Arthur Edeson broke ground last week at Malibu Lake, where he's building a chateau so close to the lake he can cast his line right out his window. . . .

Couple of other fellows (names on request) are dickering with agents who sell lots at Big Bear and Arrowhead.

Down to the Sea in—Buicks

Frank Garbutt, of R-K-O, has taken a house for the season at Hermosa Beach and is commuting daily in his new Buick, which, with its special power plant, is capable of pulling the needle to sixty-five in second. Frank drives it in high . . . in twenty-seven minutes from the studio.

Rain

Ollie Marsh has been loaned by M-G-M to United Artists, where he is supervising the photography of "Rain" for U-A with Joan Crawford in the part made famous by Jeanne Eagels. Company is presently at Catalina Island. Harry Perry is shooting with Marsh, while Charlie Bohny and Kyme Mead are acting as assistants.

Another Thriller

"Kong" is the tag under which R-K-O sends its special production into work. Picture is similar to "The Lost World," which First National produced here about eight years ago. Eddie Linden is in charge of the camera work and has as his assistant Bert Willis.

And From the South Seas—

MAX DuPont thought he'd retired to lazy comfort in Tahiti—Doug Fairbanks thought differently—The answer—Max, who shot the exteriors in Tahiti, came home with the Fairbanks troupe and is shooting the interiors on the Fairbanks stages at United Artists Studios.

Powers With Doane

Len Powers is photographing the series of shorts being produced by Warren Doane at Universal. Len has been associated with Mr. Doane for many years . . . both formerly at the Roach plant in Culver City. George Bunny is Powers' assistant.

First on Second

Dick Tower, recently elevated to first camera at First National, has completed his first picture, "The Crooner," and turned in such a splendid job that he immediately drew another important assignment and the big bosses are giving him a big hand. Dick is seconded by Tommy Branigan, with Wesley Anderson as his assistant.

Merton of the Talkies

Al Siegler is photographing "Merton of the Talkies" at Paramount and is being seen on the golf course only "if, when and as . . ." That's the only really bad thing about being a good photographer . . . it does raise the very devil with your golf score. . . .

"Yo-lee-aye-eeee"

Another mountaineer of Hollywood . . . Harry Ensign, Superintendent of Paramount Lab, is spending his week-ends at his Lake Arrowhead home. When fishing season opened, a few weeks ago, Harry was out with rod and line long before sun-up. . . . His first "strike" came within two minutes after he'd started fishing, and when the pale pink of dawn cast its rosy glow across the ripples of the lake forty minutes later . . . Harry had landed . . . (Note—Blaisdell . . . YOU go ahead and finish this . . . my conscience simply won't allow me to repeat what I've been told . . . you know this might have been a good yarn, but NOT ONE got away. . . .

Eddie's conscience won't let him tell. Although the yarn would ring the bell. But who are we to storm a breach. From which did shrink this well-known peach. For telling tales that shriek of mirth—Those fishy tales that reek of earth! G. B.

Sharp Finishes the Widow

Well, not exactly that, but what we started to say is that Henry Sharp has completed photography of "The Sporting Widow" at Paramount and will be offered an assignment at another studio immediately. Henry's second at Paramount was Otto Pierce with Lloyd Ahern as assistant.

Take Off That Beard

When the horses of "The Four Horsemen" were just little colts . . . and long before the Famous Quartet had even learned to ride . . . a youngster came over to Metro from the old Biograph, and he's been there ever since. Johnny (they called him then) Arnold is the guy. Now it's John Arnold, head of the M-G-M camera department and President of the A. S. C. . . . somewhat gray about the temples . . . remembers all about X-back and static . . . (Maybe that made him gray). How long ago? . . . Gosh . . . we've GOT to be polite.

Ride 'em, Cowboy

T. D. McCord has created an enviable reputation as a photographer of action pictures. He has been selected by Leon Schlesinger and Sid Rogell to handle the camera on the first of a series which Mr. Schlesinger will produce for release by Warner Brothers-First National. Production is under way.

A Rock's a Rock

There's the old gag about the producer who uttered the classic "A Rock's a rock and a Tree's a tree . . . shoot it in Griffith Park." . . . Here's one that (we think) tops it. An independent producer (with a very small budget) was interviewing a cameraman who had been "at liberty" for a year or so. The cameraman was interested, but he wanted to know something about the story.

"It's like Grand Hotel," said the producer . . . "It all happens in twenty-four hours." . . .

The cameraman was on his feet with his hat on . . . "Nix!" says the crank-turner, "I'm not high hat and I need the job . . . and I don't mind a five-day schedule . . . but when you guys chisel down to one day . . . I ain't interested."

Third for Premier

Bill Hyer is again at the camera for Morris Schlank in the third which he has turned out for Premier. Hyer's assistant is Bill Charney. Working at Universal Studios.

Hap Depew

Every time there's a golf tournament held by 659 . . . there's one bird who never fails to win a cup (or something) . . . Hap Depew, step right up! . . . At the moment the old putter is resting because Hap is plenty busy with the camera recording the antics of that energetic mob of youngsters who delight audiences under the Roach banner as "Our Gang!"

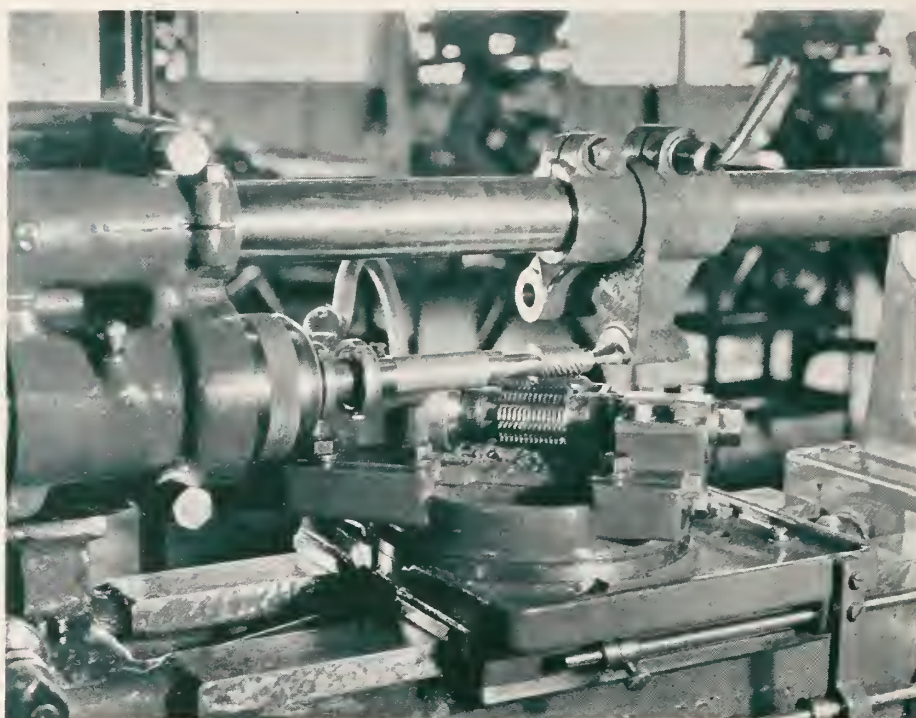
Cronjager Licks Dragon

Eddie Cronjager has finished the camera work with Richard Dix in the R-K-O feature "Roar of the Dragon." His assistants were George Discant and Harold Wellman, while second work was handled by Harry Wild and Joe Biroc.

But Tover's Isn't

Another to finish one at the R-K-O plant is Leo Tover, who completed camera work on "Is My Face Red?" . . . Seconds were Russ Metty and Milton Krasher with the assignments to Willard Barth and Irving Gassberg.

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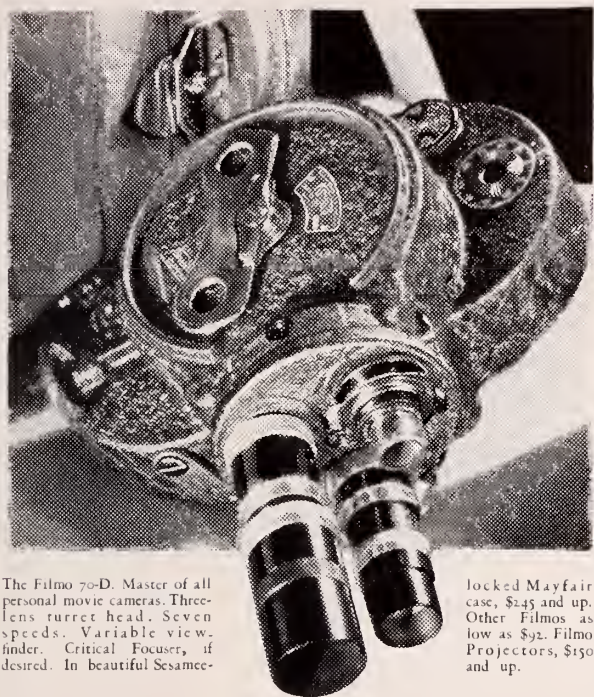
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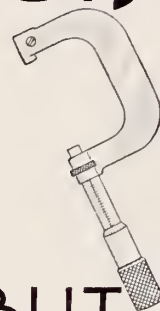
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Volume XIII

JULY, 1932

Number 3

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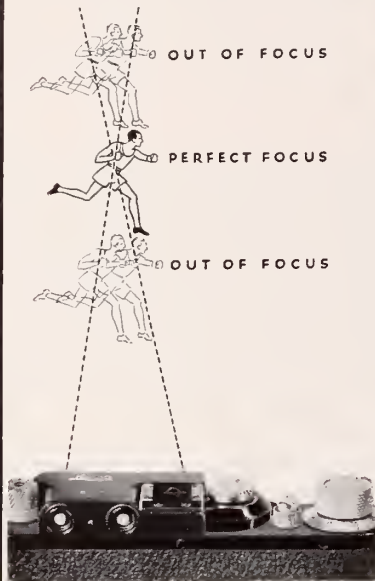
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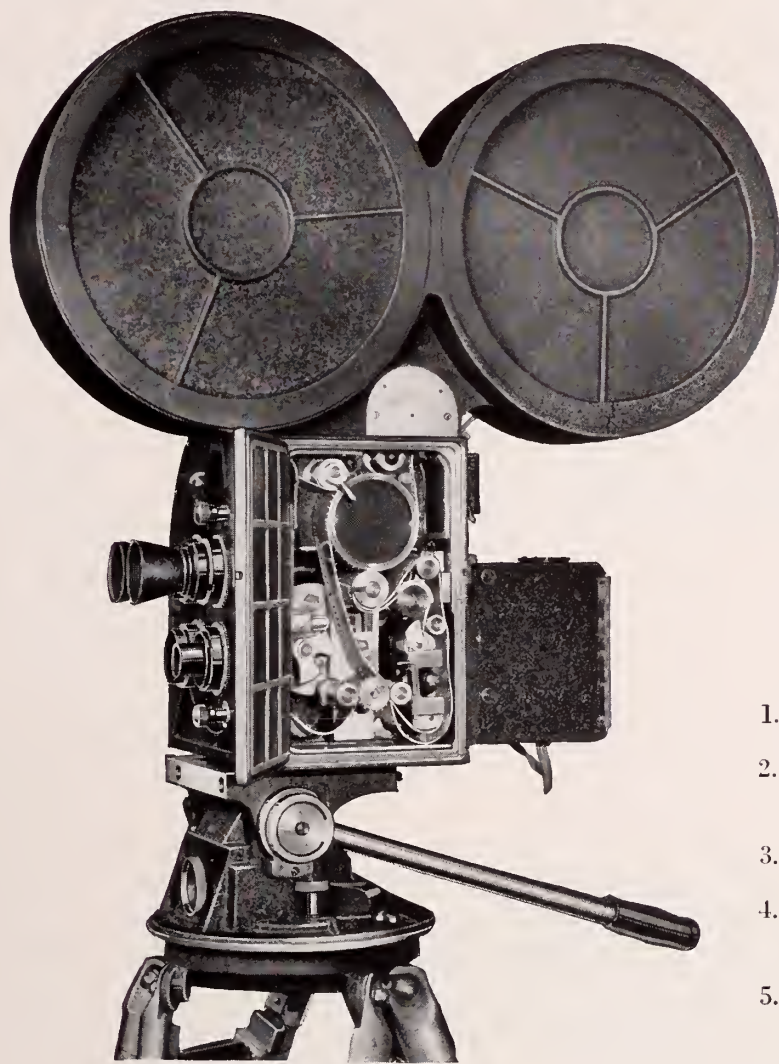
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Imagination in Set Design

by **GORDON WILES**

Art Director, Fox Studio

ONE of the most interesting problems in set design that I have encountered in recent years was the creation of a complete middle-western village for William K. Howard's production of "The First Year." It interested me, not alone because of its artistic possibilities, but because it so completely exemplifies what set-design and the set-designer may mean to a motion picture production. For in designing this set, I was from the outset confronted with questions that involved not only the obvious artistic considerations, but the story, direction, photography and production management. All of these factors, naturally, enter into the art director's work to some extent at all times, but rarely do they appear so spectacular.

In the first place, I was to create a typical middle-western village to serve as a background for this latest Janet Gaynor-Charles Farrell story. That, in itself, gave a hint as to the treatment that would be required. Therefore, from the first I determined that my village should be idealistic rather than realistic. To gain this end, I conceived a village, not as it would actually exist, but as we would like to see it; the village of our childhood memories—with all the pleasant and picturesque recollections left in, and the unpleasant ones left out. I bore in mind, too, the fact that this production is to be shown in all parts of the nation; therefore, I borrowed touches from almost every part of the country, so that my village will in some part, strike a familiar chord in the memories of everyone, whether they live in Illinois, in Maine, or in Carolina. Since my design was to be idealized, I was at perfect liberty to do this.

The next question was solely one of production management. Since this village was to be the background of the greater portion of the dramatic action of the film, I must naturally arrange my sets so that adverse weather could not cause production delays. In most pictures, this detail can be arranged for by scheduling production so that in the event of bad weather, the company can retire to the stage for interiors; but here the village and its exteriors were to serve as backgrounds for both the exteriors and the interiors. It would be very difficult to separate the two satisfactorily. Therefore, I decided that the most logical thing to do would be to build the village, complete, indoors on one of the stages. This has proven the case, for although the picture went into production during a protracted spell of inclement weather, work continued on the stage, regardless of sun, rain or fogs without. The lighting of such a set—which completely covered two large stages—was a tremendous problem, but knowing the competent artists who were to photograph the picture, I had no fears on this score. During the production, Hal Mohr, A.S.C., the Chief Cinematographer, expressed his opinion of the set when he said, "Well, it's harder to work on—keeps me on my toes every second—but the results are worth it. I can control my lighting all the time—make morning shots at noon, or in the evening, just whenever we're ready to shoot them. Between your set and the control I have over the lighting, I can get exactly what is wanted, the way it's wanted, and when it's wanted."

Similarly, Director Howard approved of the fact, saying, "It makes it a great deal easier for me, for there are none



You might think this scene was shot out of doors. It wasn't, for it is an excellent example of an "exterior" constructed and photographed inside the studio.



Here we see an exterior setting that is inside the studio, with the lighting arrangement showing.

of the delays that would occur if we were trying to make these sequences outside—no waiting for light, no trouble with extraneous noises, nothing to keep us from going ahead and doing our work as fast and as perfectly as we are able."

The economic problem of the cost of lighting so large an indoor set vs. the cost of waiting for natural light was most interesting; but the record of the actual production is bearing out the conclusions we reached in our preliminary figures, which showed that the former method would be indisputably the more efficient.

Returning again to the purely artistic phases of the problem, a most absorbing phase was the part that such a set might potentially play in such a story. It is all too infrequently that such a situation occurs, for naturally, "the play's the thing"—and the setting can never be allowed to distract attention from it. But in this instance, the setting could legitimately play a part in the story. I designed it to do so, even as the little German village in "The Broken Lullaby" played such a part in that story. It was my intent to dramatize this typical American village just as Lubitsch did his typical German village. What the result will be, I do not know, for, being adapted from a stage play, much of the action which could easily be played in different parts of the village may still be enacted in the various rooms that had to serve for the background in the more inhibited stage version.

Here is a point in which the Art Director is in a position to be of double value to the production. Very few writers—even those long trained in motion picture work—are able to think in pictures; try as they may, they cannot escape the fact that words are their principal medium of expression; hence they think in words, not pictures. Directors, on the other hand, almost universally think in terms of action; and though this is a step forward, action is still far removed from pictures. Only the Art Director and the Cinematographer, of

all the many individuals engaged in producing a picture, truly visualize things in terms of pictures rather than words or actions. The Cinematographer, unfortunately, rarely has an opportunity to bring his trained, pictorial mind to bear on a story until it is in actual production. The Art Director, on the other hand, must of necessity be consulted rather earlier, as the various sets must be designed, approved, and built well in advance of the actual shooting. The Art Director, therefore, can—if he will—be of invaluable aid in removing the taint of staginess from a script beforehand, and insuring that the result will be truly suited to the motion picture medium.

It is unfortunate that these two pictorially-minded workers are afforded so little opportunity for active cooperation. If camera assignments were made somewhat more definitely in advance, giving the Cinematographer at least a little time to formulate his plans for the pictorial treatment of a story, to collaborate with the Art Director in the final preparation of the sets, and with the Director in his final decisions as to the directorial and dramatic treatment requisite, I am confident that the results would more than offset the slight extra trouble and cost. The resultant picture would be more truly a motion picture, and more certainly a positive, homogeneous artistic unity than could ever be possible under the present system. The four most directly responsible for the finished product—the Writer, Director, Art Director and Cinematographer—would be working together, with a single mind and perfectly coordinated effort.

In the absence of such a desirable state of affairs, however, I, personally, try to do as best I can alone to insure the utmost pictorial value in the picture, and to insure the Cinematographer of truly pictorial material to work with. When I receive a script, I study it, naturally, with an eye to its pictorial possibilities. Then I break it down into a series of

(Continued on page 31)

Enter the Audiographer

by **L. E. CLARK**

LAST month, in an article appearing in this Journal, I pointed out that the sound man—largely due to his own apathetic attitude toward the artistic phases of picture-making—was steadily being relegated to the status of a mere skilled laborer. Instead of being the positive factor that he should be he is a mere accessory; important in his way, but no more to be consulted about the artistic and dramatic problems that are encountered than is the grips, the gaffer, or one of the lights. Since that article appeared, many sound men have discussed it with me. All of them, while deploring the truth of the matter, have felt at a loss as to the solution of the problem.

The solution, however, lies close at hand. Find some means of awakening the sound man from this lethargic attitude to the realization that he is in the motion picture business, and that, being in that business, he must become picture-minded, and half the battle is won. I am confident that the individual and collective ability of our sound men is sufficient—once it is directed into the proper channels—to bring the sound man the recognition he deserves, and (which is vastly more important) to be of very positive aid to the industry at large.

The question, of course, is how to bring this about.

The answer lies under our very noses. For when motion pictures were young, the cameramen were confronted with the identical problem. They have solved it by organization. From the very first, they have had their clubs, founded and maintained for the express purpose of promoting an active interchange of ideas and methods, and for directing and centralizing the efforts of cameramen—individually and collectively—along lines that would benefit both the camera profession and the industry as a whole. The culmination of all of the many such cinema camera clubs that have existed throughout the years is the American Society of Cinematographers. This purely social and academic organization is today one of the most influential bodies in the motion picture world. Its influence is felt throughout the world, oft-times in quarters far removed from the camera profession itself. As a result, the cinematographer—individually and collectively—is not alone a vital factor in the making of each production, but in the industry as a whole. The contributions of the A. S. C. to picture-making are too many and too diverse to be recounted here; suffice it to say that the whole world regards this organization as the fountain-head of authoritative information on every subject pertaining to cinematography—either as an art or a science—while the producers respect it for its innumerable constructive contributions to the business of making motion pictures, which have saved them millions of dollars, and played a great part in making American pictures supreme throughout the world.

A similar organization of sound men could be of equal importance. It would, in the first place, bring the leading sound men of all of the studios together for the purpose of exchanging ideas and bettering their work. It would focus their thoughts away from the merely mechanical phases of their work to the broader field of sound-recording as a definite part of motion picture making. It would inevitably bring forth definite, constructive steps that would be of immense value to the industry.

In forming such an organization, we have before us the example of the A. S. C., and, I am sure, the whole-hearted cooperation of that organization. Let us examine the structure and activities of the A. S. C. It is composed, in so far

as its active membership is concerned, of cinematographers: not engineers, not executives, not assistants, but men who have definitely proven themselves capable of photographing the greatest productions—men who have proven themselves outstanding both as technicians, artists and motion picture makers; in brief, cinematographers. Membership is solely by invitation, and is zealously guarded as a safeguard to both the Society and the Industry. Associate Membership has been conferred in a few instances upon others who, though not actually cinematographers, have nevertheless made outstanding contributions to the progress of cinematography as a science or as an art. Honorary memberships—the Society's proudest honor—have been bestowed upon those three great pioneers upon whom all of modern cinematography rests: the late Thomas A. Edison, the late George Eastman, and Albert S. Howell.

Largely by means of these high standards, the members of the Society have been elevated from the class of mere cameramen to the dignity implied by the title of Cinematographer. They have won this distinction by virtue of their achievements, and in consequence, are thereby spurred on to greater achievement.

By virtue of its structure, in which the practical, the scientific and the artistic are so skillfully blended, the American Society of Cinematographers is in a position to do a great deal for the professional betterment of its members, and to further the industry as a whole. By its frequent meetings, the members are enabled to conveniently gather and exchange ideas concerning their work, their methods and their individual problems. By virtue of its membership, the Society is in a position to bring incalculable resources to the solution of the problems of the individual members and to the many technical and artistic problems confronting the industry. Its research committees are constantly at work on the various cinematographic problems of the industry, for the solution of which they have incomparable resources.

The creation of a similar body among the sound men could not fail to be of vast benefit to both the individual soundmen and the industry. In organization, such a Society should in a great measure parallel the Cinematographers' organization. Even as the latter is composed of the outstanding members of the camera profession—men who are more than just cameramen, but Cinematographers, so should this Society be composed of men who are more than just sound men. The requirements should restrict the membership to the men who are actually responsible for recording pictures, just as the membership of the A. S. C. is restricted to the men who actually photograph pictures. And, as a title for these Cinematographers of Sound, why not coin the word, "Audiographers"? Derived from two Greek words, it signifies "writing with sound"—which is certainly comparable to the meaning of the Cinematographers' designation, "writing with motion."

Such an American Society of Audiographers would have three primary results. In the first place, being composed of and controlled by the men actually in charge on the set—the Audiographers—it would serve to awaken the sound personnel to more acute picture-consciousness, and divert their thoughts from the purely technical phases of sound upon which they now dwell to a consideration of sound in its true perspective, as a vital mechanical and artistic part of motion pictures. Secondly, it would give each individual sound

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Why Blondes?

by **JAMES BARKER,**

Head of Makeup Dept., Fox Studio.

PARTLY by reason of their profusion, and partly by reason of the exaggerated publicity that attaches to anything connected with motion pictures or Hollywood, the very many young women here in the motion picture business who have seen fit to alter the coloring of their hair have, as a class, become internationally known. Most particularly, those who have chosen to bleach their hair have become publicized as "Hollywood Blondes"—and persistently lampooned by many writers here and elsewhere.

But, in common with many of the other unusual and sometimes strange-seeming customs of the motion picture world, this practice of hair dyeing and bleaching has, in the case of picture-people, a very sound business reason behind it. And this reason is neither vanity nor a desire for publicity. It is simply the desire to become a success; an emotion which is common to all workers, in any field of endeavor. To explain why this creditable ambition has taken this particular form, we must analyze the motion picture business itself.

Insofar as the actor is concerned, the motion picture business is one of selling personalities. And since Hollywood is the center of the world's motion picture industry, it naturally follows that the competition is tremendously keen. Inevitably, every imaginable aid must be employed to make each personality as positive and as vivid as possible, for the only way to stand out from the crowd, or, once out of it, to stay there, is to be as vivid a personality as is possible.

Moreover, for motion pictures, one must not be merely personally effective, but photographically so. We have all known people—men and women alike—who are personally ex-

trremely interesting, even arresting, but who do not "register" photographically. In motion pictures, such people cannot succeed. Unlike people in every-day life, or even upon the stage, they do not play to living people, but to the camera. And to impress the camera, they must meet its qualifications.

The first of these, of course, is a certain regularity of contour. The second, an even quality of complexion. The third is distinctive coloring.

Many deficiencies in the first two categories can be remedied by means of makeup. The third must be remedied by wigs, which are satisfactory only when perfectly made and applied, or by altering the color of the hair—by making the hair up, as it were. This is exactly what is done by the various dye-packs and bleaches so commonly used.

But this still does not answer the question as to why this is so universally done. The answer is simple enough; insofar as photographic effectiveness is concerned, there are but two positive shades—those that are definitely blonde, and those that are definitely brunette. Unfortunately, whatever providence it is that governs the pigmentation of human hair does not appear to be photographically-minded, for the invention of the cinematograph has not prevented thousands of potential actors and actresses from being born with all of the several dozen other intermediate shades which photograph negatively. So the obvious thing is to alter the coloring of the hair to one of the distinctively photogenic shades.

This reason applies alike to the extra-girl and to the star. The extra-girl, if she is to succeed, must make the most of her personal appearance. She must be a visually distinctive per-



Note how the hair bleach renders Janet Chandler's personality more positive

sonality if she is to be picked out of the crowd and given a "bit"; and she must be at the same time photographically a distinctive personality so that, having once achieved her "bit," she may register sufficiently positively that the "bit" remain in the picture. Once she has achieved this much, and reached the small part stage, she must still be both visually and photographically a positive personality: she must be sufficiently vivid personally to impress the casting directors she interviews, and be remembered for future parts; she must be photographically effective so that she may register strongly in these parts.

As I have said, the same reasoning applies to the stars. Having once gained stellar prominence, they must exert themselves to hold what they have won. They must be continually at their best personally, for wherever they go, whatever they do, they are always more or less in the public eye—and, to be successful, they must remain so, and favorably so. On the set, they must be more effective photographically than ever, for upon them rests the burden of much of the picture. Furthermore, they have an additional reason for seeking the maximum of photographic positivity in that every extra, every small part player, and every supporting player is in competition with them, and exerting every effort to impress the camera.

Therefore, in both cases, the player must make the most of her hair. She must not only arrange it in the most effective manner, but have it colored in the most effective shade. For this reason it is that we see so many henna-redheads and peroxide-blondes in pictures: these two treatments produce the shades that combine the maxima of visual and photographic effectiveness.

From the strictly photographic standpoint, these two shades are the most desirable because they offer the cinematographer the greatest opportunities for effective lighting. Normal brunette hair, or hair that has been dyed black, photographs well enough in a straight front light, but does not take so kindly to backlighting. Henna-red hair, on the other hand, will photograph dark, but allows a far more effective use of backlighting. In addition, some of the lighter tints obtainable by this method closely approximate (photographically) the intermediate shades of brown and chestnut, with the added advantage of being photographically positive; alive, not dead.



Jean Harlow with her natural blonde hair

Bleached blonde hair enjoys the same advantages: it is tremendously effective photographically, particularly under back-lighting. It sets a player off particularly well in scenes with men, most of whom have hair that is either dark or of a less positive shade. And it generally adds force and distinction to a woman's personality, either on or off the set. Can you imagine Mary Pickford, or Ann Harding with dark hair? An excellent example of the effectiveness of blonde hair is noticeable in Constance Bennett and her sister Barbara. Both are unusually beautiful women, and both are capable actresses; but Constance is a decided blonde, while her sister has brown hair, which, though attractive, is not at all effective photographically. Both had equal chances when they started in pictures, though Barbara Bennett chose to marry, and retire after appearing in a few pictures. But—the blonde sister "clicked" from the first, while her sister with the less effective hair failed to register so well.

The means used for producing these various changes of color are generally henna packs, in the case of the reddish shades, and bleaches, in the case of blonde hair. Neither of these processes are, if carried out by competent operators, injurious to the hair. There are certain types of hair, of course, whose texture does not permit such treatment; but experienced and reputable operators can easily recognize these,—and for their own protection as well as the client's—will invariably refuse to attempt any operations which might prove injurious. Therefore, I cannot too strongly urge that such treatment never be attempted by the individual, nor entrusted to any but the most capable operators.

In some few cases, bleaching—especially if inexpertly done—may tend to destroy the natural protective oil of the hair. In such cases, though the bleach may prove successful, it is dangerous to attempt to wave the hair, for the application of heat to hair robbed of these protective natural oils dries the hair excessively, makes it brittle and unmanageable—and often breaks its structure. In such instances, the only possible means of securing more effective hair coloration is by the use of a wig.

There has been, unfortunately, a good deal of prejudice against the use of wigs for motion picture work. How-



Miss Harlow wearing the red wig used for a recent part

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The Duplication of Motion Picture Negatives

by J. I. Crabtree and C. H. Schwingel

Communication No. 488 from the Kodak Research Laboratories

I. INTRODUCTION

THE UNSATISFACTORY quality of many of the duplicate motion picture negatives produced to date has been due partly to the use of unsuitable film emulsions for their preparations, and partly to a lack of understanding of the conditions under which good duplicates can be made.

A good duplicate negative is one capable of giving a print which is a facsimile of a print made from the original negative. It should reproduce accurately the tones of the original negative unless the contrast range has been modified to correct some fault. Also, the definition and the graininess of the duplicate should be of the same order as those of the original.

Heretofore no extensive survey has been available for the purpose of choosing the best photographic material and processing technic for the production of good duplicates. In an article entitled "The Duplication of Motion Picture Negatives"¹ by J. G. Capstaff and M. W. Seymour, the use of Eastman Duplicating film (emulsion series No. 1503) was advised for both master positive and duplicate negative, both being developed to a gamma of unity.

Following this article, C. E. Ives and E. House² published additional notes and precautions necessary for the production of good quality duplicate motion picture negatives utilizing the above procedure.

The results obtained were very satisfactory with regard to quality and tone reproduction, but the graininess of the exhibition prints left much to be desired.

It was stated by some laboratories that better results with respect to graininess were obtained by making the master positive on motion picture film with lavender support developed to a high gamma, and the duplicate negative on par-speed negative film developed to a correspondingly low gamma.

Early in 1929 two new films were put on the market for use in duplicating. They were Eastman Duplicating Positive film with lavender support (emulsion series 1355) and Eastman Duplicating Negative film (emulsion series 1505). These films were recommended as being more suitable for duplicating purposes than the 1503-1503 combination. Emulsion 1505 was faster than 1503, and with emulsion 1355 it was possible to print under the same printer conditions as with Motion Picture Positive film.

In an article entitled "The Graininess of Motion Picture Film"³ one of the authors showed that the graininess of a positive print increased with increasing density of the negative from which it was printed. He also pointed out that the graininess of a positive printed from a negative developed to a higher gamma was greater than that printed from a negative of the same density contrast but which was developed to a lower gamma.

With these facts under consideration and in order to determine the most sensitive material and processing technic for duplicating purposes, the present investigation was undertaken.

II. METHOD EMPLOYED FOR DETERMINING A SATISFACTORY DUPLICATING PROCESS

More than 200 separate tests were required for the purpose of finding the most suitable procedure to follow in the making of good duplicate motion picture negatives. Each test

consisted of the printing of a master positive from the original negative and then printing a duplicate negative from this. In all cases the duplicate negatives were made with a printing contrast equal to that of the original negative. The contrast of the duplicate negative was judged by the degree of development required to produce a print of given contrast. Each test embodied some change in the process, either in the sensitive materials, the developers, or processing technic employed.

Matched exhibition prints on Eastman Motion Picture Positive film were prepared from all original and duplicate negatives and these were compared on projection, the measure of graininess being taken as the ratio of the distance of the observer from the screen to the vertical dimension of the screen. By distance from screen is meant the minimum distance at which graininess was not apparent to the eye with the line of sight normal to the screen at its lower edge.

It is true that the distance at which graininess was zero varied with the observer, but comparisons have shown that the variation was not more than 10% between individuals having normal eyesight. A greater accuracy cannot be expected and this method of comparison seemed satisfactory from the standpoint that quality and graininess were compared under practical projection conditions. The screen size was 43 in. by 57 in. with a screen brightness between 10 and 11 apparent foot candles. The projector was operated at a speed well above that at which flicker was noticeable.

The standards used for comparison were prints made from the original negatives, and new standards were made for every series and at all other times when the processing needed to be checked.

Gammas reported in this work were determined from sensitometric strips made on the film under discussion and exposed in the printer. These sensitometric strips were processed along with the master positive or duplicate negatives. All densities were measured on a Capstaff densitometer.⁴

A. Sensitive Material

An emulsion suitable for duplicating must fulfill the following conditions: (a) The emulsion must have sufficient latitude to permit the correct reproduction of the greatest scale of tones likely to be met with in the original negative; (b) it must have the ability to reproduce fine detail, otherwise a serious loss in picture definition will occur; (c) the developed image must have a minimum graininess, otherwise the cumulative effect in making the master positive and duplicate negative will produce excessive graininess in the exhibition print; (d) it must have sufficient speed to permit of printing the master positive or duplicate negative without extensive modifications of the printer optical system.

The emulsions listed below were among the eighteen different emulsions tested which showed the most promise of being suitable for duplicating purposes. Only the data relative to these will be given and discussed in this article.

Emulsion Series	Film
Number	
1302	Eastman Motion Picture Positive Film, Lavender Support.

- 1355 Eastman Duplicating Positive Film, Lavender Support
 1503 Eastman Duplicating Negative Film, Yellow Dyed.
 1505 Eastman Duplicating Negative Film, Yellow Dyed.
 1201 Eastman Negative Film.

B. Original Negatives

The original negatives chosen for this work were of average density contrast. Since graininess is most apparent in the lighter tones, such as the face and other uniform areas of low density, the scenes selected were principally close-ups.

C. Type of Printer Employed

The master positives, duplicate negatives, and exhibition prints were printed on a Bell & Howell continuous printer which had been tested and approved as giving good definition. It was found to be very important that the films be in uniform contact over the entire area of the printer aperture, otherwise a patchy, uneven image was produced. To test the printer for uniformity of contact, a print was made from a strip of evenly fogged and developed negative film. Perfect adjustment of the printer was indicated by an even density in the print, while imperfect adjustment gave the patchy unevenness referred to above. The printer was also tested for steady operation by exposing a length of positive film in the printer, without a negative, and then examining it for unevenness after development.

D. Processing Methods

Several methods for processing the films were used, including (a) rack and tank, and (b) continuous machine. There appeared to be no difference in the graininess of the images obtained by the different methods, although machine processing gave the most uniform results.

Too much emphasis cannot be placed upon the necessity for good development technic. It must be remembered that the production of a final print in a duplicating process requires four distinctly separate development operations, and since all defects are cumulative, these defects will be greatly magnified

in the exhibition print. It is the accumulation of the small defects and errors which give the "duped" appearance to prints made from unsatisfactory duplicate motion picture negatives.

E. Developers

In addition to such standard developers as formulas D-16 and D-76, a large number of developers of special composition were also tried.

Only the experimental results obtained from the use of two of these special developers will be given. The formulas will be known as Special Developers No. 1 and No. 2. Developer No. 1 contained potassium iodide and Developer No. 2 was one capable of giving high contrast.

III. DISCUSSION OF RESULTS

Table I contains the data relating to the emulsions tabulated above. All the duplicate negatives listed were made so as to have the same printing contrast as that of the original. The contrast of the duplicate negative was judged by the degree of development required to produce a given contrast in the positive from it.

A. Results Obtained with Various Emulsions in Which Both Master Positive and Duplicate Negative were Developed to a Gamma of Unity.

Tests Nos. 1 to 4 inclusive and No. 12 (Table I) were for the purpose of determining the effect of varying the type of duplicating emulsion on graininess and quality. All master positives and duplicate negatives in these tests were developed in D-76 developer to equal degrees of contrast (gamma 1.0).

From the data it will be seen that emulsion 1503 produced images with less graininess than the faster duplicating emulsions 1505 and 1355. The quality was good in all cases except that of test No. 3, where the loss occurred in the master positive. The reason for the poor quality in the master positive was that the low densities were printed too low on the density scale and, therefore, the highlight densities were printed in the region of underexposure.* It was found necessary with emulsions 1503 and 1505 to print to a minimum

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TABLE I

(Print from Original Negative - Graininess Ratio= 5.4)

No.	Emulsion Number	Developer	Gamma	Minimum Density	Emulsion Number	Developer	Gamma	Minimum Density	Quality	Graininess
1	1503	D-76	Approx. Unity	0.45	1503	D-76	Approx. Unity	0.40	Good	7.5
2	1503	D-76	Approx. Unity	0.40	1503	D-76	Approx. Unity	0.62	Good	7.8
3	1505	D-76	Approx. Unity	0.20	1505	D-76	Approx. Unity	0.42	Fair	8.1
4	1505	D-76	Approx. Unity	0.50	1505	D-76	Approx. Unity	0.45	Good	8.4
5	1355	D-16	1.52	0.30	1505	D-76	0.69	0.50	Good	6.5
6	1355	D-16	1.52	0.30	1503	D-76	0.69	0.50	Good	6.7
7	1355	D-16	1.85	0.30	1505	D-76	0.55	0.25	Very Good	6.3
8	1355	D-16	1.98	0.40	1505	D-76	0.52	0.25	Fair	6.3
9	1355	Special Dev. No. 1	1.61	0.28	1505	D-76	0.62	0.40	Very Good	6.7
10	1355	Special Dev. No. 1	1.62	0.51	1505	D-76	0.61	0.37	Good	7.0
11	1355	D-16	1.60	0.50	1505	D-76	0.60	0.45	Good	6.7
12	1355	D-76	1.05	0.51	1505	D-76	1.00	0.50	Good	8.3
13	1355	Special Dev. No. 2	2.02	0.21	1505	D-76	0.50	0.42	Good	7.5
14	1355	Special Dev. No. 2	2.04	0.50	1505	D-76	0.50	0.40	Very Good	7.2
15	1302	D-76	2.00	0.50	1201	D-76	0.50	0.45	Fair	7.9
16	1302	D-76	2.00	0.50	1505	D-76	0.50	0.42	Fair	8.1
17	1302	D-16	2.62	0.30	1201	D-76	0.38	0.30	Fair	6.5

The Transparency Projection Process

by **FARCIOT EDOUART**

Head of Transparency Department, Paramount Studio

THERE has been of late a good deal of misinformation abroad concerning the nature, the effects and the purpose of projected background or transparency cinematography. It is the purpose of this article to attempt to correct some of these prevalent misconceptions.

The mechanics of this process are comparatively simple. Essentially, the process consists of the use of a translucent screen of large dimensions as a background for action photographed in the studio. Upon this screen is projected (from the rear) a strip of motion picture film, supplying any desired background—moving or stationary. The projector and the photographing camera are electrically synchronized so that the shutters of both open and close at the same time, with the result that the image cast by the projector is photographed as a background to the actual action taking place in the foreground. The process was made practical only by the introduction of the high-powered projection apparatus developed for wide film, and by the introduction of supersensitive film. It has during the past year come into general use in practically all of the major studios as a highly important adjunct to the production of all types of films; scarcely a picture is released by any such major producer which does not include at least two or three such scenes—and some few productions have used this process to make 75 or 80% of their total footage.

The effects obtainable by this process are practically unlimited. The most obvious application, of course, is for getting close shots of people in moving automobiles, airplanes, motorboats, yachts, steamships, trains, and the like, or for securing animated backgrounds for scenes in which the players appear to be in some distant or inaccessible locality, or under conditions where either recording or photographing in the normal manner would be either difficult, impractical, or impossible.

But the use of this process does not end here; it may be—and frequently is—used to secure scenes and effects which would be perfectly obtainable in the normal manner. Its advantage in such application lies in the fact that greater control is possible, with less expense, less effort, and greater certainty. In one recent production made by the Paramount Studio, for instance, an important sequence was laid in a house over-looking the seashore, with the seacoast, including a harbor, surf, etc., visible through large windows. Such scenes could, obviously, have been made in the usual manner by selecting a suitable location and building there a set, transporting the company, with full photographic, lighting and sound equipment thereto, and photographing the scene in the conventional manner. Instead, however, it was done on the Transparency stage at the studio. The advantages were many, and of benefit to every member of the company. The studio was saved the expense of finding a location and constructing its set there, of transporting the company, with its personnel and equipment, thither, and of the inevitable delays in production that result from the natural circumstances which invariably hamper the cinematographer and recordist on such locations. The personnel of the unit were spared the discomforts of a location trip, and were able to live in their usual surroundings, working in their usual manner upon the studio stage. The recordist was benefited by the absence of untoward acoustical surroundings and by the absence of any unwanted noises. Most important of all, the cinematographer was enabled to secure a more perfect photographic and artistic

balance between his foreground setting and action and the background, with perfect control over both.

In another recent production we used the transparency process in order to secure a perfect night-effect exterior scene, with the moonlit ocean as a background. This would have been impossible to obtain in the normal manner. Moonlit night-effects are, as is well known, very effectively made in sunlight by the use of proper filters; on the other hand, these same filters alter the photographic rendition of colors, making the foreground and figures appear unnatural—often to the point of failing to match up with other scenes employing the same setting, costumes and properties, while they so alter the rendition of flesh tints as to make it all but impossible to match the makeups of the day and night scenes. Furthermore, in making such a sequence in the normal manner, the problem of lighting the foreground would be both difficult and expensive.

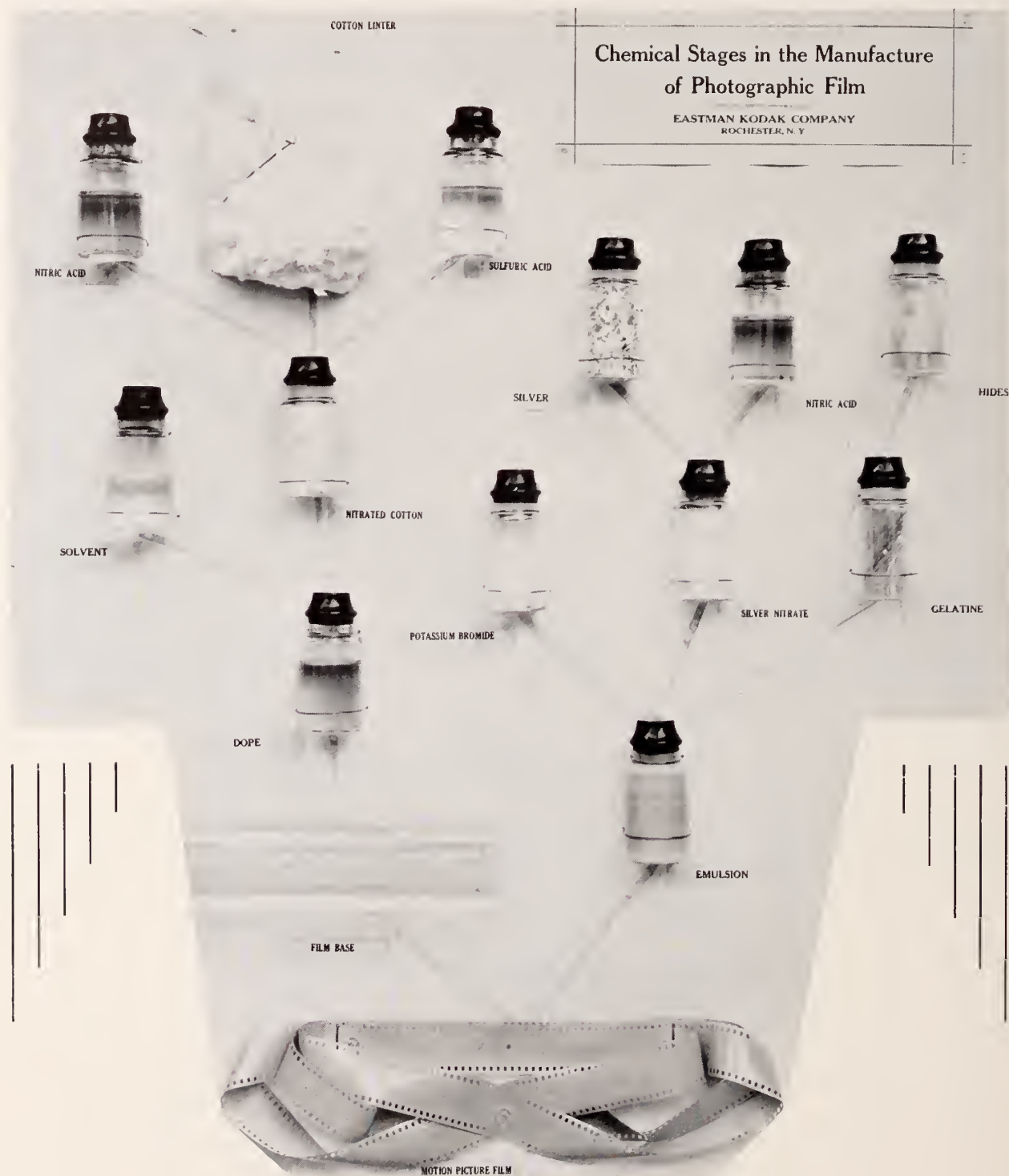
From these examples, it will easily be seen that the transparency projection process is not alone a highly useful trick process, but even more useful for saving time, effort and money in many instances where the scene could possibly be made in the conventional manner.

The question therefore arises: what is the purpose of the transparency process? Is it a process which will do away with locations, with settings, and even with the production cameraman? The answer must be, no. Those of us who know the most about this process, who have used it and developed it, must be the first to admit its limitations, no matter how boldly we set forth its advantages.

The transparency projection process is, first of all, not primarily a trick process. It has its uses, of course, in this field, for with it many effects are possible which could not be obtained by the use of miniatures, optical printing, nor any of the established travelling matte or other trick processes. But this use is, to my mind, of only secondary importance. The prime value of the transparency projection process lies in its utilization as a supplement to normal cinematography. As the various examples cited will show, transparency cinematography can be used to secure many effects actually possible by ordinary methods; its advantage lies in the fact that it will secure these efforts better, more quickly, and more easily than they can be obtained by straightforward cinematographic methods. By its use, time, effort and money are saved, and the desired effects can be obtained with more absolute control than by straight cinematography.

The technical requirements for transparency cinematography are simple, but exacting. In the first place, the background plates must be photographed from exactly the right viewpoint and angle to give the composite scene the desired perspective. They must, moreover, be photographed in a camera which is absolutely perfect—rock-steady to the ten-thousandth of an inch, and free from all optical or mechanical aberrations. They must be photographed especially for this work; ordinary production or stock-shots are unusable for background plates. I recently inspected over ten thousand feet of film offered as possible background plates for a forthcoming production; due to unsteadiness in the camera used—which would hardly be noticeable in ordinary production—I found that almost the entire footage was worthless for my purpose; out of the ten thousand feet of film, I found two scenes—a total of less than fifty feet—which might possibly be usable.

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The above picture explains more graphically than any words the making of motion picture film, from the chemical angle. The accompanying article on the opposite page, prepared by members of the Eastman Kodak staff, gives an interesting description of the film making work. Another installment appears next month.

Motion Picture Film

In the Making

IN SUNNY Southern fields "darkies" sing as they pick cotton. . . . Steamers chop through the long ocean miles bringing saltpeter from Chile. . . . Sulphur comes to the surface in Texas. . . . Japanese with broad straw roof hats prepare camphor for shipment in Formosa. . . . Lumbermen harvest mighty trees and alcohol is distilled from the waste wood that is too small for lumber. . . . Participants in a successful theatre industry dine on roast beef while the hides from beef are only beginning their industrial career. . . . Mexico, land of the conquistadors, yields the silver valor dared for. . . . Methodical extractors derive potassium bromide from Great Lakes brine deposits. . . . A flash in the witches' cauldron of the photographic industry and film is produced.

But the witches who conjure up several hundred thousand miles of magical ribbon every year wear no conical caps nor ride broomsticks. Change the picture to patient, alert engineers, skilled by long training in meeting rigid standards of accuracy; veteran emulsion chemists whose technique enables them to offer their market 100 different types of film; research men who hold their jobs because they are able to know what the photographic public is going to want several years later and have it ready. No less capable combination of men could conduct an industry in which delicate laboratory operations have been magnified to huge mass production proportions, and conduct it so that the product is satisfactory and uniform.

Let's, as a party of men who make their livelihood using film, visit a plant where film is made—not by any means a hypothetical manufactory, but an entirely real group of more than 75 major buildings standing on 400 acres and manned by a force of 6,500 persons imbued with an equally real tradition of making and meeting the "raw stock" standards of the motion picture industry and the nation's photographers, day in and day out.

Entering from the busy highway, we find the grime and noise usually associated with manufacturing strangely missing. Here, instead, is a calm setting of stately elms, shrubbery, tidy lawns and ivy-clad buildings.

Scanning the figures for size, we shall realize that the industry confronting us is large in scale; but, in that, it is not distinctive from other huge enterprises—from an automobile factory, say, or a locomotive plant.

This film manufactory is different, however, from any other industry in the fact that the scale of operations, the expense, the large personnel, all are concerned in an unrelenting fight against seemingly inoffensive enemies—a speck of dirt too small to be seen, a slight variation of temperature, a dim ray of light entering where it does not belong.

In subsequent instalments we may have an opportunity to examine in detail some of the elaborate, unending precautions taken in the permanent drive against these enemies. For the present, let's simply pass quickly through our typical film manufactory for a quick survey.

Trees and lawns fronting this film plant exist only in part to beautify the grounds. A barrier against dirt is the more important purpose. The six miles of street within the plant are paved, and are constantly sprinkled, to guard not against dust that is unpleasant but against dust that endangers perfect pictures. The chimneys that carry fumes and cinders 366 feet into the air, the fireless steam locomotives, the fleet of electric trucks, the constant use of scrubbing machines and floor waxing machines, the white laundered shirts worn in any build-

ing where film is uncovered, the employment of full-time cleaning crews, are not merely interesting innovations. They are part of a grim program that keeps this film plant perhaps the cleanest industrial area on earth.

We are using the term "film plant." It is not even necessary for this party of visiting motion picture projectionists to remember that a variety of photographic products is made here, since 35 mm. film for the motion picture industry is the object of their interest. Film for millions of snapshot cameras, nevertheless, is an exceedingly important product, comparable to motion picture film. It was a piece of amateur camera film from here that Edison had received when he said to his associates building a motion picture camera: "That's it. We've got it. Now work like hell."

Home movies—personal motion pictures—sprang from here and now form the equivalent of a large industry in themselves. Portrait and commercial photographers must be supplied, not with one type of film and paper, but with scores, to meet the various exacting needs of their work. Medical and dental radiologists diagnosing the infirmities of human anatomies, X-ray technicians examining the soundness of metals, of building materials, and of aeroplane parts, use a huge annual acreage of their recording medium.

Photo-engravers, bankers, astronomers, aviators, draftsmen, detectives, microscopists—a great variety of professions and activities have need for the photo-sensitive materials that this plant supplies. American consumption of photographic paper alone amounts perhaps to 4,500 acres annually.

Let our party take one of the passenger buses which depart every quarter-hour on routes that carry those with business, and may carry us as visitors, to the various factories and offices of this expansive area. The buses are a necessity, for there is a mile and a half of distance from the entrance gate to the remote buildings of the many that fit into the scheme of this city of well-seasoned brick and ivy.

Through streets flanked by high-walled buildings, our bus travels, passing wheeled and pedestrian traffic; but the trucks move more silently and the pedestrians walk more briskly than the traffic of a less purposeful city.

On one side we see a six-story structure, a block long, which we are told is built over a reservoir that holds 5,000,000 gallons of water and that is emptied and refilled three times every day the plant is in full operation.

Down one street we observe a solid masonry wall with no window breaking its expanse. Behind it, we are informed, great white machines with many precise moving parts are turning in dim light or none, coating the transparent, flexible film base with the emulsion.

Along another thoroughfare flanked by ivy-covered walls we catch a glimpse of an imposing structure which overlooks the entrance to our typical plant. This, our guide answers, is the research center—in truth a research university in the sphere of photographic science. From here has come knowledge enabling continual advances in the quality and performance of photographic materials, some heralded, some made without public notice. Here, too, have been discovered many hidden complexities of photographic sensitivity; and here, as well, numerous patient studies have been made that have given photography and the motion picture art a scope undreamed of when they first came into being.

(Continued on page 30)

HAL HALL

says

An Invitation

SINCERELY hope that if any of our readers come to Los Angeles for the Olympic Games this month and next that you will not fail to visit us at our quarters in Hollywood. We shall be more than delighted to be of any service and trust that you will accept our invitation. And—if any reader wishes to have a mailing address where he knows his mail or telegrams will be kept safely for him, just use our office. Our telephone number is GRanite 4274. Our address is 1220 Guaranty Building, Hollywood.

Reward

THERE is an old saying to the effect that "charity begins at home," which should be emblazoned upon the walls of Congress at Washington. It seems but yesterday that we were being called upon to provide money for the feeding of Europe's starving women and children—and but a short time ago that we were depriving ourselves of necessities in order to buy liberty bonds to provide cash to send across the water to help other people blow each other's bodies to tiny bits. And some of us (this writer included) were giving up opportunity for self advancement and rushing into the army, gladly willing to give our lives if necessary so that our country could hold its head up as proudly in the future as in the past.

And now, what! Thousands of American women and children are hungry and ragged—eating in soup kitchens and bread lines set up by private charity. Thousands of our American men who went "over there" and passed through a living hell of mud and filth and gas and shrapnel are unable to secure employment to keep body and soul together. And a Congress made up of men who do not know what it means to be unemployed or hungry refuses to give them what is justly theirs—the adjusted compensation which is so poorly called the bonus. These men are not asking for charity. They are asking for what they earned—some of them by losing a leg or an arm. And a group of Senators, overburdened with assumed dignity and with hearts as hard as flint, tell them, "No." Tell them to go back home—but to what? To more hunger and suffering.

What a shameful sight to see those thousands of what once was the flower of our American youth, down there in the Capital of the richest country in the world—in rags—living off charity provided by citizens who are ashamed of the way their country is treating these men who offered up their lives when this same Congress saw fit to declare a war. How can these Senators who have refused to pay these former soldiers face the world without a blush of shame! They vote billions for strangers and pork barrel spoils—but they take one look at the thousands of ex-soldiers living in the mud flats of Washington under conditions that we would not impose upon a hog—and then after eating a big meal of expensive foods—tell these hungry men who only ask what is coming to them, virtually, to go to Hell. What a sweet condition! What an inspiration for the boys of today who may be the men who will be called upon tomorrow if there is another war!

Oh, where are those back-slapping promises given the boys as they were marching away to war! "Nothing will ever be too good for these heroes," I heard many times in those days. And now they are given thin soup and a leaky tent on a mud flat. God! Is this America! Is this Democracy!

The Amateur Contest

TIME flits rapidly by during the sunny summer months, so I take this opportunity of calling the amateurs' attention to the fact that only four more months remain in which to make a picture and enter it in the \$1000.00 Amateur Movie Making Contest which this magazine is conducting. The contest closes at midnight of October 31, 1932. Any pictures mailed after that hour will not be eligible, so you who have planned to send in a picture should begin to get busy now so you will not be too late. And I would advise that you amateurs in foreign countries who are entering pictures, try to get them on their way as early as possible so there will be no chance of delay. Some pictures are coming from as far away as India. As it takes approximately a month for them to reach us, I think it would be wise to send them as soon as possible. Also send a letter notifying us that the films have been shipped. Then, if they do not arrive when they should we can start a tracer on them.

In answer to a flock of questions from amateurs, let me say that all films entered in this contest **WILL BE RETURNED TO THEIR OWNERS**. We do not keep any films after the contest is decided. They are kept in a fire-proof vault while in our possession, and the finest care is given them to assure their safety. Also, there is no limit to the footage of the films to be entered; and you may select any subject you desire. On another page you will find a list of the equipment prizes that will be given in addition to the \$1000.00 in cash prizes. This is the greatest collection of prizes ever offered the Amateurs for 16 mm. picture making, and if you have not already entered a picture, you are passing up a fine opportunity for recognition and prizes. Better decide today that you have just as good a chance as the other fellow, and then send in your notice of entry and get busy on the film. Or, perhaps, you have a film ready which may win a prize. But, you had better start hurrying.

Beauty On the Screen

THE following comment appeared in the Hollywood Herald of June 25, and seemed so worthwhile to this writer that we are passing it on to our own readers.

"For many years beauty, sheer pictorial beauty, was an important asset of the screen. Since the coming of sound the word has scarcely been used in vocabulary of either the makers or critics of the motion picture.

"Something considerably more significant, more sinister, than neglect and preoccupation is involved. The motion picture has become 'punch crazy,' in panting pursuit of speaking stage climaxes and the fussy business of wordy gags. It has been very considerably forgotten that the motion picture should still be made with the camera and that the microphone is an attachment, an accessory, both as a mechanism and as a tool of the art of expression. The word as thus far applied to the screen has vastly increased the motion picture's capacity for innuendo and salacity, but not even the stoutest defender of the current technique has ventured to say that it has been used to enhance lure and glamour."



Rendezvous

Frank Tanner



Picture Makers

Eugene Robert Richee



"Sun-down"—Death Valley

Clarence Slifer



"Home"

Bruce Lindsay

Concerning Cinematography

Critical Comments on Current Pictures
by **WILLIAM STULL, A. S. C.**

MARKED MEN.

◆ Now and then one encounters a picture which is both entertaining and instructive. "Marked Men" is such a picture, for in addition to being an excellent "Western," it has been so capably photographed by Dan B. Clark, A.S.C., that it could well be used as a cinematographic text-book for amateur and professional alike. The greater part of the production was filmed in the Mojave desert, and these sequences are superb examples of the finest type of exterior cinematography. Every scene offers the cinematographer definite lessons in composition and filtering, and the few interiors that are intercut with these—especially the first interior sequence—display a type of effect lighting rarely seen in "Westerns." The last reel or two of the film, however, was made on the stock "Western Street" of the Universal "back lot"—and no amount of artistry could perfectly match it up with the location sequences. There is a lesson in this for producers who, appalled by the fact that they have spent perhaps a hundred thousand dollars or so on a production of this nature, attempt to save a few thousand by using stock settings already used and re-used. They save the cost of new sets that would match the remainder of the production, it is true; but at the same time, they rob the picture of a vast deal of "production value."

Still another fact proved by this production is that that exterior cinematography should be recognized as a highly specialized department; many a potentially fine picture has been ruined by someone's oversight of this cardinal fact. For a cinematographer may be a superb master of interior cinematography—lighting, composition and cinematics—but yet find himself utterly lost when on exterior locations. The reverse, likewise, is naturally true. Seldom—so specialized has cinematography become—does one find a man equally adapted to both the stage and the open spaces, as is Dan Clark. For, although Clark's work has been primarily with out-door films, he has proven himself equally an artist on interiors. This production again shows it; for his interiors are beautifully handled, and the exteriors are, as has been said, superb. He has neither over-used nor under-used filters, diffusion, nor any device; his compositions are models of perfection, and his effect shots (especially several night-effects) are noteworthy. If anything could be added to this film, it would be the use of tinted-base stock for a major part of the film, if not all of it.

THUNDER BELOW

◆ This production, photographed by Charles Lang, A.S.C., is most capably and artistically handled. In the opening sequences too great use was made of the camera-crane, and, perhaps, these exteriors were not comparable with Lang's work on the interiors. The major part of the film, however, is well up to Lang's usual high standard. An interesting detail is the use of the visual moods of the photography in accentuating Charles Bickford's blindness; in the earlier sequences, before the affliction overtakes Bickford, the photography is in a relatively high key; immediately after the first hint of failing sight, the key begins to lower, until finally when the man becomes blind, the visual mood suddenly darkens, and thereby aids tremendously in giving the audience the desired emotional reaction. The only definite criticism of

the production, photographically, is that the same degree of diffusion was not maintained throughout—a flaw which was accentuated by the cutting.

RESERVED FOR LADIES

◆ Both technically and otherwise, this is by long odds the most finished product that has yet come from an English studio. The photography, by Phil Tannura, is technically as perfect as though it had been made on Paramount's Hollywood stages, and, artistically, brings pleasant recollections of the fine work Mr. Tannura accomplished here before he left. Alexander Korda's direction, too, is noteworthy, and immensely superior to anything he accomplished while in this country. His frequent—and vastly effective—substitution of pantomime for dialogue should be studied and emulated by American directors, as should the restrained use of camera-movement.

There is, however, one grave flaw in the film; this is the complete omission of screen-credit for Mr. Tannura. This crying injustice should be remedied before the release of the picture, for Tannura has not only made it the finest film ever to leave Britain, but has also photographed the star, Leslie Howard, vastly better than any previous picture has revealed him.

WEEK-ENDS ONLY

◆ This is the first production that Hal Mohr, A.S.C., has photographed for Fox—and he has made a very fine job of it. The Fox studio needed Hal Mohr, for despite the fact that they have some of the industry's finest cinematographers on the rolls of their camera staff, they have not had anyone whose work is of the same style as Mr. Mohr's. In return, Fox has very generously repaid Mr. Mohr with the finest release-print quality that any of his productions have enjoyed in a long time.

Both technically and dramatically, "Week-Ends Only" is a highly enjoyable film, despite the disadvantage of a too-familiar plot. The picture opens with a most amusing sequence in which animated-cartoon figures, superimposed on a normal photographic shot tell the tale of the late stock-market crash briefly, and in a manner that holds many hints for both professional and amateur filmers. From thereon, disregarding the expert direction and capable playing, Mr. Mohr's photography is enough in itself to make the picture worth seeing. He has photographed all of the players perfectly, enhanced the beauty of Gordon Wiles' settings, and sustained his photographic mood throughout to perfection.

But undoubtedly the most welcome feature of the production is the fact that the credit-sheet credits the photography not merely to Hal Mohr, but to "Hal Mohr, A.S.C." This is a policy which all producers would do well to pursue. The fact that a majority of the producers entrust the photographic direction of their greatest films to A.S.C. men exclusively clearly proves that membership in the American Society of Cinematographers is an asset to not alone the individual cinematographer, but to the producer and the production; and it is logical, when one has such an asset, to publicize it. Therefore, let us hope that more producers will follow Fox' example, and publicize on their screens the fact that their films are photographed by members of the A.S.C.

Andre De Brie Visits Hollywood

Famed French Camera Constructor on Survey Tour

by **WILLIAM STULL, A.S.C.**

DURING the latter part of June, Hollywood's motion picture community was honored by a visit from Europe's foremost constructor of cinema equipment, M. Andre de Brie, whose firm some few months ago produced its six thousandth professional camera. While there is some possibility that M. de Brie may introduce in this country the new, silent camera which is already in general use in the studios abroad, M. de Brie stated that his present visit to America was purely in the nature of a survey.

"I have made this trip," he said, "purely for the purpose of studying at first hand the technical phases of the American motion picture industry. It is to be regretted that the pressure of my affairs forces me to curtail my stay here, for there is much to be learned; but I have tried, in so far as the time allowed, to make my survey complete. Of course, I could not visit every studio, nor meet all of the technicians; but I have tried—and, I feel, successfully—to gain, in the brief time at my disposal, a representative cross-section of the methods, needs and ideas of the American Cinema.

"It is difficult, as yet, to attempt to clearly formulate the results of my survey. The impressions and experiences have crowded closely upon each other, and there has been no time as yet to evaluate and tabulate them. But I leave with a profound respect for everyone that I have met here—and an understanding of conditions here that cannot help but be valuable to me and to my confreres in Europe.

"Although in the same business, the European and American film industries are faced with problems that differ greatly; consequently each has developed along more or less different lines. Here in America, for instance, your production is vastly greater than ours; accordingly, you have far excelled us in the matter of organization. Your technical and artistic resources are magnificently organized and centralized in the Hollywood community; ours are scattered through many communities and half a dozen or more nations.

"Here in America, you produce more than six hundred feature pictures a year. In France—despite the fact that our production is extremely large for Europe—we rarely produce more than a hundred and fifty feature films per year, and far fewer, as an average. It could not be otherwise, however, for your market is vastly greater than is ours. I doubt very much if the French and French-language market could absorb more than a hundred and fifty features per year, while it is certain that your vast market easily absorbs your five or six hundred productions, and cries for more.

"Under such circumstances, it is only natural that the European and American film industries should develop differently. To my mind, each has certain advantages over the other. From the artistic viewpoint, I believe that the European community has a marked advantage in that, since its production—limited though it is individually—collectively reaches the same total figure that yours does, is divided among several different national film centers. In my own country, the production is, as I have said, limited; so it is, too, in Germany, in Italy, and in England; but the production, being so divided among several nations, can—and does—develop along individual, nationalistic lines. In France, for instance, the major part of our product is written by Frenchmen—and made for French audiences. It reflects the French thought. A few miles away, across the Channel, lie the British Studios, whose

product is essentially British, and reflects the British thought. Across the Rhine, in Berlin and Munich, Germany's production centers, we find a product reflecting the German thought, while in Italy, Scandinavia, and Russia we find productions that similarly reflect the conceptions of the various peoples of those lands.

"Naturally, this tends to develop a distinctive film-technique in each country; and despite the language-barriers introduced by sound, the films are sufficiently circulated so that the cineastes of each country may see and appraise the work of their colleagues in other lands.

"In Europe, too, we have the advantage of this without absolute loss of contact with each other, for (especially when judged by American standards) Europe is relatively small. Therefore, upon questions of material and methods, we still have the opportunity for exchange and centralization. For instance, if you will permit me to mention it, my cameras are the standard equipment in practically all of the studios—German, Italian, Scandinavian, Russian, and English as well as French.

"Our smaller individual production has been of considerable benefit in technical matters, as we have been able to develop new technical equipment for sound-cinematography. In this respect, I feel that Europe is far ahead of America. Here in your country, your cinematographers are praying for silent cameras; in Europe, we have had them for over a year. Our apparatus for the moving-camera technique (which is equally popular, by the way, with both French and American directors) is, I believe, far more complete than is yours; more compact, more refined, and more easily handled. Our perambulators are motor-driven, and noiseless.

"We have had, too, greater time to experiment in many directions. We tried out wide film, for instance, nearly ten years ago—and found it impractical, just as you did last year. We experimented with talking pictures—the Gaumont System—even longer ago. We have not, however, done a great deal with natural-color cinematography, despite experiments by Gaumont, Keller-Dorian, and others; this has been for purely economic reasons. We admire the beautiful natural-color cinematography in American pictures, but, due to our more limited production, we find the cost is prohibitive.

"On the other hand, our limited production has had its disadvantages, too. We cannot hope to equal your resources of personnel and material, nor your marvellous organization. Our technicians and artists cannot be so constantly employed as yours even through this depression. Our organizations cannot be so complete, nor our financial resources so large.

"The future lies in a more complete cooperation between motion picture communities on both sides of the Atlantic. We can learn much from each other. To my mind, the matter is best summed up in the statement that, at the present moment, Europe is in advance in technique and material, while America is supreme in organization. Only through complete cooperation—in which such organizations as the American Society of Cinematographers, and such journals as THE AMERICAN CINEMATOGRAPHER will play vital parts—can we realize the great future that is in store for the cinema, and rise above today's grave economic difficulties."

.. In the Realm of Sound ..

Portable Projector From Debie

A PORTABLE 35 mm. projector of unique construction known as the "Jacky," a product of Andre Debie, manufacturer of Paris, is being marketed in this country by the company with headquarters in New York.

The device, which is small and compact in size, being 1 foot by 8 inches in length, 1 foot by 1 inch in height and 9½ inches wide, consists of projector, one unit containing sound-head photo-electric cell, three-speed amplifier and volume control, transformer box for alternating current from 90 to 220 volts, dynamic speaker mounted in special trunk, sound screen, set of cables, hermagis projection lens, 1,000-foot magazine, set of legs for speaker and projector and 500 watt lamp.

Two trunks contain the entire equipment with a total overall weight of 120 pounds. Perfect projection is obtained, it is declared, for 100-foot throw and sound sufficient for an audience of 1,000. Features of the equipment, which is now in use on several French liners, are said to include rock steady construction, flickerless, absolutely no danger from fire, no special electrical installation necessary, metal construction throughout, film in detachable boxes, film perfectly protected and enclosed while running, film can run backward or forward by hand or motor, picture by picture projection backward or forward, instantaneous stop on any picture for any length of time for "still projection," motor film rewind and extremely easy to operate and smooth running.

Printing machines and a machine for removing scratches on negatives are also being manufactured by the company.



R. C. A. in England

PUBLICITY Films, Limited, subsidiary of the London Press Exchange, which is the largest advertising agency in Great Britain, has been granted a sound recording license by RCA Photophone, Ltd., and immediately will begin the production of a number of sponsored advertising sound motion pictures for several leading manufacturers of English products. Publicity Films, Limited, has operated studios at Wimbledon, near London, for the production of silent pictures for the past ten years, and at the present time has contracts with more than 2,000 theatres.

In addition to producing advertising subjects, Publicity Films will record a number of industrial pictures for exhibition to sales organizations and in non-theatrical institutions, for the reproduction of which the RCA Victor 35 mm. and 16 mm. portable apparatus will be employed. It is said that both of these machines have found an unusually healthy market in the British Isles.



Government Purchases "Rico"

THE War Department of the United States Government, operating the Federal Barge Lines, has selected a "RICO" Junior recording unit, after a careful survey of all available equipment.

This "RICO" unit will be used in the production of a picture featuring the development of the Mississippi Valley, for display at the Chicago World's Fair.

Fire Alarm Turns Talkie

ANNOUNCEMENT has just been made by the Western Electric Company of the perfecting of a new fire alarm system designed to prevent stampeding of people in fire emergencies. It was publicly demonstrated recently at Atlantic City.

By means of electrical devices, the system combines an automatic fire detector with a music reproducer which is connected to loudspeakers. In the demonstration at Atlantic City, a small flame is placed near the fire detector. A few seconds later the detector responds in three ways. It sends an alarm straight to the fire houses, directing the fireman to the side of the building nearest the fire, while in front of the building itself an arrangement of lights shows them in what particular part of it the fire is located. At the same instant, the music reproducer commences playing and is heard over loudspeakers. Thirdly, green arrows light up, pointing out the correct route for exit.

The record, designed in this case for use in a school, begins with a flare of trumpets, followed by a distant siren. Then a calm but commanding voice says: "There is a fire emergency but no immediate danger. You must leave the building. You are drilled in this and know just what to do. Leave your hats and coats, take your places in line. Steady now, don't rush. Follow the green arrows." A brass band strikes up a martial air and the sound of approaching sirens is heard through the music.

Everything in the record has a definite purpose. The band piece was chosen for its strong marching rhythm. The siren is injected to accustom the children to it in drill so that they will not be frightened when they hear the real thing for the first time. Fire chiefs recommended the command to abandon hats and coats as experience shows they are likely to be dropped, causing others in the line to stumble.

The automatic fire detector uses special wiring which is sensitive to heat. The core is a fusible alloy enclosed in a steel sheath which is slit along its entire length. At 160 degrees Fahrenheit the alloy melts and expands forcibly. It spurts through the slit and, making contact with an outer metal sheath, causes a short circuit that sets off the alarm. In actual installation, this wiring is placed throughout a building and a very small current, enough to spring the alarm, is kept flowing through it.

In the Western Electric Sound System that is used, the music reproducer is associated with an amplifier which may be connected to loudspeakers of any size placed in any number of rooms, hallways and auditoriums. The apparatus is "electrically supervised." A small current, about equal to that consumed by an ordinary 60 watt electric light bulb, keeps the amplifier tubes warm and ready to operate instantly, and also notifies the local technician should the slightest misadjustment occur. All the vital apparatus in the system is protected in a fire-proof vault.

**No Sound Engineer Should
Be Without Volume 2
Cinematographic Annual**

Ruggedness Features New Lamp

THE Nela Park Laboratories of the General Electric Company have created a new simplified construction for high-wattage incandescent lamps which differs radically from the fundamental concepts of lamp design as followed ever since Edison built his first lamp. When the movies made demands for high-powered lamps in sizes far above standard practice, the development followed, naturally, along lines of old established usage. But when we consider that some of the largest incandescent lamps made contain three pounds of heavy tungsten metal or enough to make forty-thousand 50-watt lamps, the matter of filament weight introduces an entirely new factor in lamp design and construction.

Essentially, the ordinary incandescent lamp consists of a glass stem structure which carries the leading-in wires and the filament. Around this structure and sealed to the glass stem is a bulb, and to the bulb a base is finally added making connection with the leading-in wires.

The new problem of high-wattage lamp design has now led to a simplified construction using fewer parts, and changing the entire operation of lamp fabrication. Starting with two copper prongs which serve as a base, and to which a special heat resisting glass cup is sealed, the entire internal structure is built up from the prongs, and the bulb is sealed to the glass cup as a final operation.

The new lamps, because of their simplicity of design and construction, are more rugged than the old types and consequently better qualified to meet the severe demands made upon them in studio service. This outstanding characteristic is attributable to a design eliminating from the new lamps all of those parts which in the older types were centers of weakness.

The major changes which contribute to this greater ruggedness are:

1. The omission of the conventional base which had to be secured to the bulb by cement or clamping. In the new lamps bi-post bases are used. This base consists of a glass cup with two metal posts sealed to it. Connection to the socket is made through the lower part of the post, which consists of a cylindrical prong with a shoulder for accurate seating.

2. In the old construction, the filament and leading-in wires were supported by a glass stem structure, with leading-in wires for the current fused in the glass stem. This necessitated the use of special glass and special leading-in wire material having a coefficient of expansion which matched that of the special glass. To get the heavy current into the bulb it was necessary, therefore, to have a section of copper, a section of tungsten, a section of nickel, and in some types a section of molybdenum making up the leading-in wire.

In the new lamp, the stem seal is eliminated and the supporting structure is made from one piece of channel nickel. This construction gives maximum strength to the long leads carrying the heavy filament and also provides maximum exposed surface to dissipate the heat and thus prevent overheating of the metal.

3. The special heat-resisting glass which was necessary for the stem seal material, on account of its expansion characteristics, required the bulb material to be of this same glass also, in order to make a reliable seal between the bulb and stem. Unfortunately, this particular glass when heated above a certain point, devitrifies and turns white causing premature failure of the lamp; now a special heat-resisting glass which does not devitrify is coming into use. In order to use this more desirable glass in bulbs, it is necessary to make a splice between the two kinds of glass in the stem tubing and great technical skill is necessary to do this satisfactorily.

4. In the new lamp, the metal prongs which hold the lamp in the socket or adapter have the nickel channel leads welded directly to them and thus they carry the weight of the entire metal structure, where formerly the glass assumed the burden. These prongs also carry the weight of the bulb through the strong pressed glass cup to which they are fused.

Many of the higher wattage lamps are used in projectors or equipment requiring accurate positioning of the source with relation to reflectors or lenses. In the older lamps, there were two points of weakness to contend with. The connection between filament mount and bulb was made in a plastic medium and the base was then placed on the bulb to provide as much correction as skill and the nature of the materials would permit.

In the new lamp the relative position of base and light source is determined entirely by metal working accuracy. It is inherently a prefocused lamp. The parts are built up starting with the base and ending with the bulb being sealed on as a final operation. In mounting the filament, the base and leading-in channel pieces are placed in a mechanical jig so that the shoulders of the prongs are in a fixed plane. It is then possible to locate accurately the filament with reference to this plane and the center line of the mount.

Through the elimination of the base, the heavy leading-in wires and the large stem, the new lamps are considerably lighter in weight and shorter than their predecessors. Non-devitrifying glass bulbs, which stand up better under high temperatures, make possible the use of bulbs of minimum size. This makes possible the storage of a greater number in a given space, and is a decided advantage in the studios where space is limited.



A "Two-Eyed" Film Camera

MOTION pictures are invading the sports field from a new angle through the development of the Kirby Two-Eyed Camera, a motion picture and timing device electrically operated that photographs a record of both the finish and time of a race. It was developed at the Bell Telephone Laboratories for Electrical Research Products under the sponsorship of Gustavus T. Kirby, noted amateur sportsman who is chairman of the Advisory Committee of the I. C. A. A. A. and of the Olympic Games Committee.

Although not yet at the marketing stage, the device was satisfactorily demonstrated at the recent Columbia-Syracuse and Princeton-Cornell dual meets. It will be used at the I. C. A. A. A. meet in Berkeley this month and later at the Olympic Games.

The timing device consists of three dials registering in minutes, seconds and hundredths seconds that are attached by wires to the starter's pistol and begin to revolve the moment the hammer of the pistol strikes. A 16 mm. motion picture camera with a double lens that registers 128 frames a second photographs the runners finishing and their time simultaneously, providing an indisputable record of both.

Kirby said he realized the need of such an indisputable timing device about five years ago when a committee looked at motion pictures of the finish of an intercollegiate race and found the runner who finished second hadn't even been placed by the judges. Subsequently he contacted with ERPI officials who had a similar idea but greater laboratory facilities with a subsequent pooling of ideas.

The specific advantages of such a device Kirby pointed out are: first, an indisputable record to go by; second, the elimination of the average of human error in the handling of stop watches, and third, an ability to record time in hundredths of a second as compared to the stop watches' tenth of a second.

Laboratory Department

Conducted by EMERY HUSE, A. S. C.

Principles of Sensitometry and Their Practical Application

Part 15

THE preceding article discussed in some detail the various chemicals entering into photographic developing solutions and the part they played in these solutions. It is important now to consider somewhat the action of development, going into some detail regarding the structure of the developed photographic image.

The photographic emulsion consists fundamentally of silver nitrate, potassium bromide, and other chemicals, suspended in gelatin and coated upon some support such as film base. It is possible by chemical and physical control of the silver salt crystals, together with the addition of other materials, to make emulsions of different characteristics. They can be made either slow or fast, of low contrast or high contrast, varying in sensitivity to light of various wave lengths. The processes of making light sensitive photographic emulsions are extremely delicate. Emulsions of different characteristics are made for different purposes and it is extremely important that in the use of these emulsions considerable thought and care is given to the development of these emulsions. The strength and temperature of the developing solutions play a very important part and there are other items which must be seriously considered in compounding a developer formula for any specific type of work.

Development of emulsions naturally follows the exposure because it is only by development that it is possible to discern what has taken place during the exposure. The silver in the photographic emulsions prior to development is basically in the form of silver bromide. The process of development is to liberate by chemical action the bromide, thus reducing that salt to metallic silver. The rate at which the grains develop depends upon the number of exposed but undeveloped grains left and after the grains are developed and the number of undeveloped grains remaining becomes less, fewer and fewer grains develop in each minute until finally it is not worth while to prolong the development in order to get more density. If the development is prolonged beyond the point at which all the exposed grains are developed, then there is danger of developing some of the unexposed grains, thus causing what is known in photographic terminology as "fog." This fog produces a veil over the whole negative, exposed and unexposed portions alike.

The growth of the image during developing is referred to as growth of density, that is to say, the density is a measure of the number of grains of silver which are produced at any given point because these grains, after the film has been cleared by the fixing bath, obstruct the passage of light through the film.

It can be seen that there are stages during the development process when all of the exposed silver grains are not developed. It is possible, therefore, to stop development at any point by removing the photographic material from the developing solution and fixing it. This fixing process removes all of the unexposed and undeveloped grains, leaving only the metallic silver grains which were developed as a result of exposure. The degree of contrast in a negative, therefore, can be controlled by the extent of development. Contrast is the difference of density between the darkest portion and the lightest portion of the negative.

Just as there are emulsions of varying degrees of speed and contrast so are there developer formulas differing in the same degrees. The functions of developing solutions of different kinds are to help promote the same ideas for which the various types of emulsions were manufactured. In the consideration of picture negative an emulsion of high speed and low contrast is desired, for the reason that accurate rendering of minute details is essentially important from the negative standpoint. The developer for this type of film should be one that preserves the delicate gradations which have been picked up by the negative and to accomplish this a slow working, safe developer is necessary.

In considering the picture positive and the use to which it is put it is easy to realize that a certain higher degree of contrast is desirable to produce upon the screen a picture having roundness, depth, and brilliance. The emulsion manufactured for this purpose is basically a high contrast low speed emulsion. The developer in which a film of this type is handled is a rather fast, contrasty solution.

In considering sound negative, which in the majority of cases is made on a positive type of emulsion, an extremely soft developer is used to produce low contrast for one type of sound recording, while for another type a more contrasty and more vigorous solution is necessary.

The foregoing statements have been given to show very briefly how the developing solutions must assist the emulsions in producing the desired results. It is not the purpose of these articles to delve into the field of practical photography and explain why emulsions of certain characteristics are devised for certain purposes. In this particular section of this series of articles we are concerned most with the developing aspects. It would be well at this point to give in tabular form developer formulas which could be adopted with or without modification for the development of negative or positive picture or sound.

It is logical to consider first the picture negative as it is around this that the entire motion picture photographic art is built. The outstanding formula for the development of picture negative is that formula commonly referred to as the "borax developer." This formula was originally presented to the trade in the form of a solution to be used by the rack and tank method of development, because at the time of its origination there was practically no machine development used. The standard published borax formula for rack and tank use is given here.

Borax Developer (Tank)

(Fine grain picture negative developer)

Elon	2 grams
Sodium Sulphite	100 grams
Hydroquinone	5 grams
Borax	2 grams
Water to	1 liter

It will be observed that this formula is extremely simple and contains but four constituents. The proportions of elon and hydroquinone govern to a large extent the contrast building power of that solution. The borax is the accelerator. The sulphite, besides being the preservative, is the major element in the production of the fine grained effect. The sulphite acts as a partial solvent for the developing silver halides and this solvent action prevents grain clumping. As a result this developer compared with any other type of negative solution is far superior because of the fine grained results produced by it. This developer is recommended for use at 65°F. with a time of development varying from 8 to 15 minutes, depending upon the degree of contrast desired.

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Processing Sound Track

Both Negative and Positive

by **J. ELLIOTT JENKINS**

Jenkins & Adair, Inc., Chicago

THE following information on the laboratory processing of negative and positive sound track has been obtained by us from the most reliable sources on this rather intricate subject. Though the information varies considerably as to general procedure, we are presenting all that we can obtain for what it is worth. It must be noted here that this information applies only to the recording of sound track on POSITIVE STOCK as used in a DOUBLE RECORDING SYSTEM, and that recording done specifically with a GLOW TUBE.

1. The following procedure has been worked out as the result of a paper by Mr. Sandvik and Mr. Hall on variable density processing, delivered before the Society of Motion Picture Engineers, Spring meeting, 1932. It is an attempt to suppress harmonics as much as possible, and at the same time give a sound track of good contrast and high audio response.

Using sensitometric strips or their equivalent, determine the time of immersion in some good positive developer to give a Gamma of 0.6.

Make several short sections of unmodulated track with different glow tube currents, ranging say from 5 to 10 M.A. for the ordinary tube.

Develop these sections at the time found above to give a Gamma of 0.6, and determine which glow tube current produces a track of Density 0.4.

Record with glow tube at this current and develop to Gamma 0.6.

In making the print, adjust intensity of the sound track printer lamp to give a density of 0.7 to 0.6 or Transmission of 20% to 25% in the unmodulated portions, when the picture positive is properly developed.

2. This procedure is used to some extent in Hollywood and recommended by a manufacturer of recording equipment.

Determine Time Gamma for developer which will give 0.55. Find the required glow tube current to give a Density in the unmodulated track of 0.3, or 50% Transmission.

Process the sound track to the above Gamma, using the glow tube current thus determined.

Adjust the sound track printer lamp so that the unmodulated portions will have a Density of 0.7 or Transmission of 20% when the picture positive is properly developed.

3. A large West Coast producer of talking pictures used approximately the following procedure:—

Determine the time of the developer to give a Gamma of 2.30.

Find the required glow tube current to give an unmodulated track Density of about .75 at the above Gamma.

Adjust the sound track printer lamp to give a Density of 0.7 to 0.5 or Transmission of 20% to 30% when picture positive is properly developed.

4. We can give the following preliminary information on the new Eastman recording stock, which has a high-speed positive emulsion on a gray base to reduce halation.

Find the Time Gamma for developer to give 1.65.

Find the required glow tube current to give a Density of 0.7 at the above Gamma.

Adjust sound track printer light to give a track of Density .46 (35% Transmission) when picture positive is properly developed.

We can include at this point a few definitions and descriptions which may be in order:

GAMMA:—Gamma is simply a numerical measure for contrast. It is the name given the number which is the natural tangent of the angle made by the straight-line section of the H and D curve of any developed emulsion with the horizontal line, or abscissa. After reading the rest of this paragraph, the above should have some meaning. The H and D curve for any emulsion, developed for a known period, is obtained by exposing a section of the film in question so that each successive exposure increases according to the square law. Such an exposed strip may be very rapidly made on a good camera by making a sequence of photographs at one shutter speed of a brightly illuminated sheet of white paper, and opening the iris diaphragm one stop for each succeeding exposure. Develop for a predetermined number of minutes and measure the density of each exposure. Plot these values along the abscissa of plain cross-section paper at points equal to .03, .31, .58, .92, 1.20, etc., as the diaphragm opening is **increased**, against the densities of each succeeding exposed section. The resultant curve should have in its middle portion a straight-line section. The natural tangent of this section to the horizontal line is Gamma, for this particular emulsion, processed in a certain developer for a certain number of minutes.

The stronger the developer, the steeper this curve will be for a given emulsion and a given time.

The longer the time of development, up to a certain point, the steeper this curve will be for a given emulsion and a given developer.

Emulsions of different speed, in a given developer for a given time, will give similar Gammas.

As this curve approaches the vertical, Gamma of course increases as the tangent of angle it makes with the horizontal, which simply signifies that the picture or sound track is more and more contrasty.

When Gamma equals unity, the slope of the H and D curve is 45°, the tangent of which is 1. This signifies that the densities of the negative are exactly in inverse proportion to the lights and darks of the photographed subject. If the positive is developed also to a Gamma of unity, this condition will be maintained. Furthermore, if Gamma for the negative times Gamma for the positive equals unity, the above is also true.

The so-called "Classical Method" was to develop negative and positive sound track so that the product of the two Gammas equal 1. This method is still used to some extent, but has several undesirable effects when used in the processing of glow tube recording.

SENSITOMETRIC STRIPS:—These are sections about 10 inches long which have been exposed with a logarithmic increase, just as may be done in the above procedure with a good camera, but with much greater accuracy. The Eastman

(Continued on page 31)

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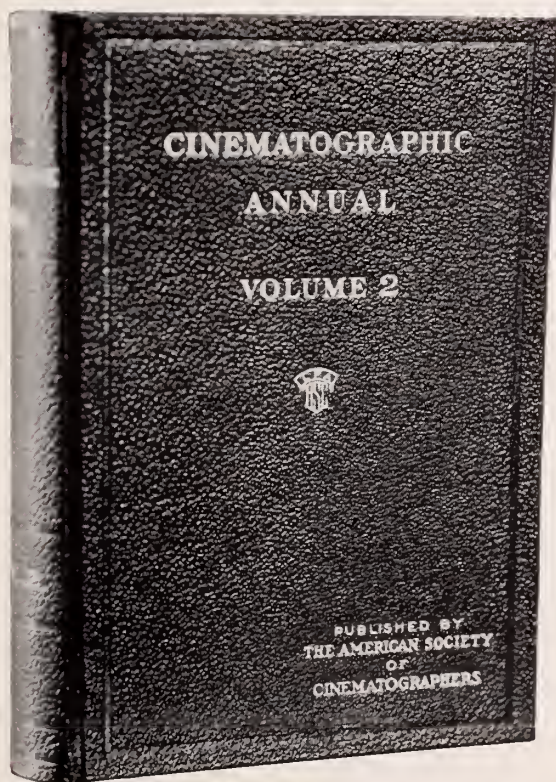
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Published in Hollywood by the

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Motion Picture Film

(Continued from page 17)

There, on our right, is a building in which silver, by modern alchemy, is turning into materials far more precious to this civilized era—including motion picture film to entertain every week a large portion of the population of the United States.

It is a temptation to spend too much time seeing what happens to the silver. More than four tons of it are used every week. That is fascinating because it sounds fabulous. More interesting to technicians are the methods of converting silver purer than that which the mint buys into perfectly pure silver nitrate, ready for emulsion making; but we must leave closer inspection for a later instalment, even though the production and testing methods involved are quite typical of the whole film-making operation.

The film support or base—here again only a quick glance at the process—is composed of cotton which has been treated with a mixture of nitric and sulphuric acids to render it soluble in a mixture of solvents, the chief of which is methanol (wood alcohol). The "dope" obtained by dissolving nitrated cotton, having the consistency of honey, is spread on the polished rim surfaces of great wheels that run continuously, night and day, month after month. Heat around the giant wheels drives the solvents from the "dope" and permits the nitrated cotton to assume the form of a thin transparent layer on the surface of the wheels. After various convolutions within a machine, a wide strip of finished film base emerges and is wound up in rolls like newsprint paper.



Coating film base with emulsion

Let's examine for a moment the steps that must be taken, collateral with the manufacturing process so briefly outlined, to insure the quality of the resulting film support. Let it be remembered that a microscopic speck of dust embedded in the material might be the nucleus of a spot causing a freckle on the nose of an immaculate cinema actress, a sharp crackle in the midst of a sound-film love scene, an extra star in some astronomer's Pleiades—or might spoil a snapshot of a child in some particularly entrancing pose.

Unusual climatic conditions might bring deterioration of valuable films if such exigencies were not provided for in manufacture.

Purity and precision are imperative in every operation and handling during film manufacture.

Samples of all cotton coming into the plant are tested before use. Three potential variables are thus governed. . . . Cotton, before being dumped into the nitrating machines, is accurately weighed. Variables of the nitrating acid, in addition to its

temperature and amount, need to be controlled—and tests accomplish this. . . . Nitrated cotton, immersed in water, flows only through tile pipe-lines, to avoid contact with metal. . . . In the purification and storage building to which the flow is conveyed under a street and under a railroad track, the tanks are made of material inert to the ravaging action of acids so that no impurities may be introduced at that point.

The substance inelegantly called "dope", after the nitrated cotton has been thoroughly dissolved by its solvents, actually is the direct culmination in chemical purity of the careful work of hundreds of chemists and skilled workmen; and the result of study and improvement by two generations of engineers and research scientists. The physical condition of the material, as distinguished from the chemical, becomes evident when one sees the resulting sheets of film base winding through the great machines, so flawless and transparent as to be practically invisible.



Battery of machines converting film "dope" into sheets of film base

Gelatine is used in large aggregate quantities to suspend the emulsions' silver salts evenly on the film base—but gelatine for photography must be chemically purer than that used for food. To make photographic gelatine, patient processes of chemical treatment in hundreds of covered concrete tanks prepare hide remnants for cooking. The gelatine, after washings, boilings, filtration, solidification, blending and action to remove any accidental metal content, is ready to join the silver nitrate in the emulsion department.

The making of light-sensitive emulsions—the portion of film which actually records the picture—is a highly diversified and extremely delicate process. The photographic industry, in fifty years of experience, has turned an art depending on chance and mood into an exact science. The genius of pioneering emulsion makers, combined with the manufacturing talent of picked chemical technologists and combined with the large production which the photographic industry has reached—for size and therefore continuity of operation is an important factor in insuring uniformity of photographic materials—has established the quality of this delicate substance known as photographic film on a level where the users of film need hardly give a thought to its quality.

The news man "shoots" racing aeroplanes from a precarious perch; the studio man makes softly moulded close-ups with exquisite care; the laboratory man produces several hundred prints of a feature. All these activities require types of film that will respond faithfully to the technicians' skill, every time, year after year.

Chemical and physical control of silver salt crystals, together with the addition of extraneous materials, makes emulsions

(Continued on page 49)

Army Officer to Hollywood

THE United States government, through the War Department, is keeping abreast of all technical developments in motion picture production procedure. Through a cooperative program worked out by the Academy of Motion Picture Arts and Sciences, which will be continued this year, selected Army officers are sent to Hollywood where they spend time in the various departments of the different studios learning current processes and technique.

Captain M. E. Gillette, now stationed in the War Department offices at Washington, D. C., has been ordered to this duty and will arrive in Hollywood later this summer for a comprehensive course in the making of sound motion pictures.

The officers receiving this instruction will form the nucleus of a unit in the Signal Corps charged with the production of educational sound motion pictures to be used for the instruction of both the Regular Army and the Officers Reserve Corps.

Captain Fred W. Hoorn, who received this instruction through the Academy last year is now located in Washington, D. C., where he is engaged in the preliminary organization of this new Signal Corps unit.

Imagination in Set Design

(Continued from page 9)

pictures; I sketch out the arrangement and composition of each scene. In doing this, I almost invariably find that this pictorial visualization of the script has revealed action that is missing, that is superfluous, that can be told in pictures rather than dialog, or that can advantageously be transposed to another set. Frequently I find angles on some certain action entirely missing, or, perhaps, wrongly or misleadingly used. If it is possible at this stage, I then consult the Cinematographer who is to photograph the picture. Between us we may find other changes advisable—eliminate this, add that, or alter the other. Thereafter, I consult the Director and the Scenarist both together and separately. When my pictured script is finally completed to the satisfaction of all concerned, I begin the planning of the sets themselves. I make colored drawings of each set to visualize the design. From these drawings, we prepare the actual plans, which must naturally embrace the physical, architectural and engineering details necessary for the construction and use of the set. Finally, the set is built, painted and dressed, ready for use. The rest rests with the Cinematographer; and these men rarely fail.

Another condition exists which hampers the Art Director and the Cinematographer alike. This is the inadequate opportunity afforded for coordination of sets and costumes. Both the Set Designer and the Costumer must work in complete coordination; but the latter is rarely allowed the opportunity for this, since the costumes are all too frequently ordered at the last minute, and under circumstances that allow him little, if any time to find out what sort of sets they are to be used on.

Fortunately, however, I am certain that the day of more perfect coordination of all of these vital factors is at hand. And when it arrives, we can be sure of pictures that are motion pictures not alone by chance, but by deliberate intent. For we cannot fail to make real moving pictures once the Writer, the Director, the Art Director, the Costumer and the Cinematographer are allowed to coordinate their ideas and efforts.

RCA for Rockefeller City

CONTRACTS providing for the most complete system of sound reproduction and amplification ever designed for theatres have been awarded to the RCA Victor Company, according to an announcement from Rockefeller Center, Inc.,

holding company for John D. Rockefeller, Jr. These contracts call for the installation of all the necessary sound equipment in the International Music Hall and the RCA Photophone sound reproduction in the RKO Photoplay Theatre, on the Radio City side of Rockefeller Center.

The installation, when completed, will embrace a public address system, annunciators, projection booth sound apparatus, rear stage reproduction, seat phones for the hard-of-hearing, and custom built film phonographs for the reproduction of sound effects.

In the projection booth the equipment will consist of an 80-watt double channel unit with four, all AC operated, sound motion picture projectors.

The rear stage sound reproducing equipment, consisting of two sound channels, will be used for the reproduction of sound effect in connection with stage productions of the International Music Hall.

Acousticon Seatphones will be installed for the benefit of the hard-of-hearing at convenient locations in the orchestra sections of the theatre. The complete annunciator system will give the stage manager and other officials contact with all dressing rooms, the projection booth and any other parts of the theatre.

Processing Sound Track

(Continued from page 28)

Kodak Company, Hollywood, California, has signified its willingness to supply these strips made on the type 11-B Eastman sensitometer. In using these strips to determine Time Gamma of the developer, plot each successive square in steps of 0.15 as described above. These strips are generally supplied on Eastman positive stock, so much of which is used in recording, and are most convenient in determining Time Gamma for developers.

THE DENSITOMETER:—A simple and very accurate densitometer, and one much used in the motion picture industry, has been designed by Capstaff and is supplied by the Eastman Kodak Co., Rochester, N. Y. This instrument is very portable and convenient and operates from a 6 volt storage battery or 110 Volt AC circuit. It consists of a simple optical arrangement, whereby an unknown density is composed with the varying density of a glass disc. The disc is rotated to make the reading, and only a few seconds are required. It is calibrated in Density, and a chart is supplied giving conversion into percent Transmission when required. The area of the film to be examined is only about 1 square millimeter.

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Uniform Aperture Information

MOTION picture theatre managers and projectionists in foreign countries throughout the world will soon receive copies of the Academy Uniform Aperture Information Leaflet written in their own language as a result of plans announced by Lester Cowan, Executive Secretary of the Academy of Motion Picture Arts and Sciences. This is the final step in the educational campaign to inform theatre managers and projectionists of the changes necessary to correctly project the improved uniform picture frame recently recommended by the Academy and adopted by all the American studios.

Arrangements have been completed with the cooperation of the Motion Picture Producers and Distributors of America, Inc., for engineers stationed in Paris to translate the technical terms of the instructions, after which they will be given world-wide distribution.

Reports received by the Academy from the Film Board of Trade Secretaries in the key cities indicate that the information sent out with the first releases coming from the Hollywood studios photographed on the new frame size has reached all theatre managers and projectionists in the United States. All pictures now being released should be projected through an aperture of the correct .600" by .825" dimensions in order to insure that all essential action reaches the screen.

Projection supervisors and circuit executives have strongly endorsed the new Uniform Aperture, noting savings in time and costs which will be effected in the theatres, as well as an improved projection of the picture upon the screen.

Duplication of Motion Picture Negatives

(Continued from page 14)

density greater than 0.4 for a gamma of 1.0 in order to insure good tone reproduction. With emulsion 1355 lower minimum densities were permissible. Comparison of the results from tests Nos. 1 and 2 showed that an increase in density in the duplicate negative caused a very slight increase in graininess. Likewise, from the results of tests Nos. 3 and 4, it was seen that an increase in density of the master positive caused the same effect. Results from tests Nos. 9 and 10 also confirmed this observation. This fact is not new and is in agreement with the previous findings of one of the authors.³

B. Results Obtained Using the 1355-1505 Process

In tests Nos. 5 to 14 inclusive, Eastman Duplicating Positive film, emulsion series No. 1355, was used for the master positives and the yellow dyed duplicating negative film for the duplicate negatives. With the exception of test No. 6, Eastman Duplicating Negative Fast, emulsion series 1505, was used for the duplicate negatives. Tests Nos. 5 and 6 were for comparing the merits of emulsions 1503 and 1505 when used for the duplicate negative and developed to a low gamma. There appeared to be practically no difference in the graininess or quality when comparisons were made between the exhibition prints.

Test No. 8 shows the results obtained when the master positive was developed to a very high gamma in developer D-16. The duplicate negative, which had been printed to the lowest minimum density in the region of correct exposure, was developed to a correspondingly low gamma. The result was a very low graininess ratio (6.3), when compared with the results of the other tests. However, the quality was not as good as with the lower gamma master positive due to the necessity of printing the high master positive densities in the region of overexposure. By lowering the gamma slightly (1.85) the quality was improved. This was illustrated by the results obtained from test No. 7 in which there appeared to be no increase in graininess over that in test No. 8.

Tests Nos. 9 and 10 were for the purpose of determining whether or not a special contrast iodide developer would permit

the use of lower minimum densities for the master positive. It apparently had no advantage in that respect and was objectionable because the graininess was slightly worse than in the case where D-16 was used (tests Nos. 10 and 11).

Tests Nos. 13 and 14 were made using a special high contrast developer. Results showed that the quality was good, but the graininess was worse than in those tests where D-16 was used for developing the master positive.

C. Comparison Between 1355-1505 and 1302-1201 Processes.

Tests Nos. 15 and 16 were for the purpose of comparing the results obtained from the 1355-1505 and 1302-1201 processes; also for determining the effect of using emulsion 1505 for the duplicate negative in the 1302-1201 process. The results showed that for equal gammas the graininess was appreciably better when the 1355-1505 process was employed. No advantage was gained by using emulsion 1505 instead of emulsion 1201 in the 1302-1201 process.

Test No. 17 showed that graininess results comparable with those obtained in test No. 7 were obtained when 1302 was developed to a very high gamma (2.62). The quality was poor and development defects were noticeable, caused by the very low degree of development necessary for the negative.

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*For explanation of emulsion characteristic curves with regard to exposure, latitude, tone rendering, gamma, etc., see:

"Fundamentals of Photography" by C. E. K. Mees—Chapter VIII. Published by Eastman Kodak Co., Rochester, N. Y.

"Photography—Principles and Practice" by C. B. Neblette—Chapter IX. D. Van Nostrand Co., Inc., New York, N. Y.

Editor's Note: This is the first installment of this interesting paper which was read before the S.M.P.E. The second part will appear in the August issue

Welcome, Mr. Sheehan

AFTER months of rumor and disquieting gossip, "Winnie" Sheehan is again back in charge at the Fox Studios; and with his return a perceptible change in the studio atmosphere is noticed. Nothing breaks down the morale and the efficiency of a force of workers quite so much as uncertainty; and for many months there has been plenty of that at the Fox lot. New heads came and went like flies, and studio workers at times hardly knew who to call the boss. Now that Mr. Kent has assumed the presidential post and Sheehan is back at the studio helm we can again look for Fox Films to turn out a product that they may well be proud of, and one which should make for black ink in the ledger instead of red.—H.H.

Academy Award Committee

APPOINTMENTS to the 1932 Committee of the Academy of Motion Picture Arts and Sciences on Annual Awards for achievements in motion pictures are announced as follows by President M. C. Levee of the Academy:

David O. Selznick is chairman of the committee, which includes three representatives for each of the five Academy branches, as follows:

Actors—Edward G. Robinson, Fredric March and Jean Hersholt; Directors—Ernst Lubitsch, Lewis Milestone and King Vidor; Producers—David O. Selznick, Louis B. Mayer and Walter Wanger; Technicians—Cedric Gibbons, Carl Dreher and Ralph Hammeras; Writers—Oliver H. P. Garrett, Frances Marion and Al Cohn.

STYLES *from* HOLLYWOOD

Evening Costumes

At upper left is Joan Marsh in a dress of bright red crepe with high waistline effect and skirt of almost train length. The short white fur jacket has great appeal among the younger Hollywood picture stars and is frequently seen at evening affairs among the picture people.

◆ At upper right is the popular Hedda Hopper wearing one of the longer evening wraps. It is of black velvet, showing white satin lining. This wrap has wide-flaring cape sleeves and graceful fur scarf which reaches the ankle-length of the wrap.

◆ At lower right is the charming Norma Shearer wearing one of the short evening coats. It is of ermine and black velvet, but, unlike the one on Miss Marsh, this has flaring sleeves.

◆ Maureen O'Sullivan is shown at lower left wearing a full-length evening wrap of satin, trimmed with fur at collar and cuffs.



Amateur Movie Making

by WILLIAM STULL, A.S.C.

THE Tenth Olympic Games, which will be held in Los Angeles the last of this month, may well be cited as a demonstration of the civilized world's devotion to sport; but to those of us who are in any way interested in cinematography, they will have an even greater significance as a demonstration of the world's acceptance of amateur cinematography. It is difficult to predict how many of the hundreds of thousands of visitors from all parts of the world will be equipped with amateur cinemachinery—some estimates have been as high as one out of every three—but it is certain that a very large portion of the Olympic visitors (to say nothing of the contestants) will be amateur cine enthusiasts.

There is much food for thought in this, not alone for the vast legion of amateur cinematographers, or those whose business it is to supply them, but also for everyone in any way connected with the motion picture and photographic industries. Amateur Cinematography has come into being during the last ten years, and has grown to its present amazing proportions actually since the last Olympiad. Ten years ago, in all the world there were but a few hundred scattered amateur cinematographers; today there are over a million in the United States alone. Ten arenas, each larger than Los Angeles' great Olympic Stadium (which seats 110,000) would not be sufficient to accommodate them.

Ten years ago, the few scattered amateurs in cinematography used equipment of at least six or eight different film-sizes. Today the millions of amateurs are united in the use of 16 mm. standard film and equipment. Ten years ago, amateur cinematography was so expensive as to be well-nigh prohibitive; today it is within the reach of anyone of moderate means. Ten years ago, cinematographic equipment was bulky and complicated; today it has shrunk to coat-pocket dimensions and "Brownie" simplicity. Ten years ago, sluggish, color-blind Orthochromatic film was the best available; today, Super-sensitive Panchromatic and Kodacolor emulsions are the rule. Who dares say what the future holds?

Suffice it, then, that the Tenth Olympiad will certainly be the Cinematic Olympiad, as well. How, then, shall we expect to secure personal, pictorial records for our personal film-libraries? How can we expect to get anything worth while, when there will be hundreds of thousands of people viewing each event, and thousands of amateur camerists seeking each vantage-point?

The only answer is: come prepared to **make** whatever position you may draw a vantage-point. Come prepared with both the equipment and the knowledge necessary to this, and you will not return disappointed.

The first preparation must be, of course, resignation to the fact that unless you are a gate-crasher of an order vastly superior to Mr. "One-eyed" Connelly, you cannot obtain a position directly on the field, as you could at lesser meets. Therefore, you must be willing and able to "cover your story" (as the newsreel men would say) from the stands. This of course means telephoto lenses. Not—if you want the best results—just a telephoto lens, but **several**, for you cannot forecast your exact location, or, even if you could, the exact groupings of the different athletes in the different events. Moreover, for some events you will want one angle, and for others, a different one. Therefore, as large a battery of telephoto objectives as your purse can afford. For practical purposes, a two inch, and a four inch should be ideal, while in some instances a six-inch lens should prove handy as well.

The one inch lens is, of course, indispensable, for you will need it for your general use on the trip. In addition, you will need it if you want to accurately picture the stadium and the crowds. You will want the one-inch lens, too, for most of the swimming events, which are, naturally, held in a smaller stadium.

The two-inch lens will, I believe, prove the most generally useful in the stadium, for it will bring you close up on many of the race-events—as close, that is, as you will care to come unless you want to fill the screen with one certain contestant. In addition, it will give you full-screen figures of the diving events.

The four-inch lens will be your photographic field-glass; it will give you close shots of the finishes of races, and of the individual contestants. In addition, it will prove indispensable if you want to get full-screen figures of such events as the shot-put, the discus, hammer and javelin throws, the pole-vault and the high and broad jumps. It should likewise be of value in the yachting and rowing events.

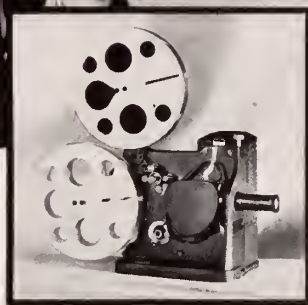
The six-inch lens will be of greatest value in securing exceptionally close shots of phases of the field events just mentioned, and in the aquatic events.

Now, telephoto lenses—as most of us have learned from sad experience—mean tripods; and tripods and crowded stands do not work well together. This problem is perplexing, but by no means unsurmountable. The simplest makeshift to use in such a difficulty is the handy little chain-support marketed by the "Leica" people. This consists of a small block, which is screwed into the camera's tripod-socket, and a yard or so of light chain attached to the block. The trailing end of the chain is caught under the toe, and the camera raised so that the chain is taut; with a little practice one can learn to keep the camera surprisingly steady with the aid of this simple gadget. But, if you want a more substantial support for the camera than this, it is easy to obtain an English walking-stick tripod. Normally, these are very attractive canes; but when the occasion arises, presto! off come handle and ferrule, out slide three extensible legs—and you have an excellent light tripod. These tripods are, however, designed for light still cameras, so they have no pan-and-tilt movements; furthermore, they take up quite as much space, when open, as any other small tripod. But—why open the legs? used with the legs folded, as a unipod—a mere support for the camera—they offer everything needed, for they may be panned and tilted themselves, support the camera firmly, and require a minimum of space. There are, too, I believe, unipods made exclusively for cine work in England.

So much for tripods. Now, how about film-speeds and angles?

These two are, in this case, somewhat dependent upon each other, and upon the lens used. It is extremely advantageous to have a multi-speed camera for such work as this—and not alone for the possibility of making slow-motion pictures, either. When you are working from a foundation which is at best not perfectly firm (as is the case with either the chain-tripod or unipod), the use of a slightly increased camera-speed will do a great deal to make the pictures appear steady on the screen. The normal taking-speed is, of course, 16 frames per second; but if we increase this to 24, or even to 36, minor vibrations and unsteadinesses are to a greater or less extent ironed out, while the screen speed of the action

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THIS EASTMAN
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CINÉ-KODAK M, \$75...KODASCOPE C, \$50

THERE IS a vast difference in lenses with the same *f.* rating. The lens on the Ciné-Kodak M is a *true* anastigmat *f.*3.5, giving sharp definition from edge to edge of the image. No focusing is required. And it's no mere fair-weather lens, for it gives you the same superb picture quality throughout the range of diaphragm stops.

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EASTMAN KODAK COMPANY, ROCHESTER, N. Y.

Sound Cartoons and 16 mm.

by **WALTER LANTZ**

Creator of Universal's "Oswald" and "Pooch" cartoons

THE advent of sound has changed the business of animated cartooning tremendously. In the old days, one needed merely to be something of a cartoonist, something of a "gag-man," a good animator—and just a little crazy, in order to make animated cartoons. Nowadays, in addition to all of these, one must be something of a musician, as well, and demented enough to produce slightly crazy music as well as slightly crazy drawings. In producing sound-cartoons commercially, we have, of course, the advantage of being able—or to put it more truthfully, compelled—to do things by factory production methods; we let one man take care of the story, another the music, others the backgrounds, animation, etc. Of course, the average amateur movie maker cannot do things on this scale, but there is really nothing to prevent him from experimenting with animated cartooning, either silent or with sound, if he wishes to—and has the patience that the work requires.

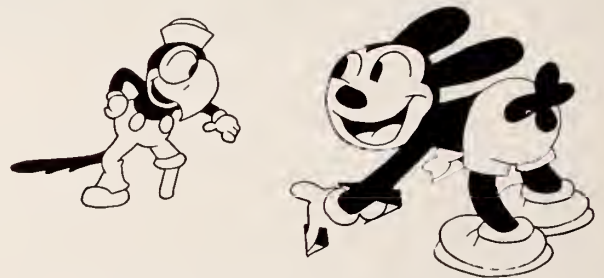
Viewed from the photographic angle, all that is necessary is a camera that can be made to expose one frame (or picture) at a time, stop with the shutter closed, and wait until it is required to expose the next frame. There are several 16 mm. cameras available with hand-cranking mechanisms; one or two of them even have the required one-picture-per-turn movements; but even without this refinement, so long as they have the hand-crank, they can be used for cartooning. Any machine-shop can build a gear arrangement that will permit the single-frame work; the normal crank gives eight pictures per turn, therefore an 8:1 reduction gear will do the trick and give you one exposure for each turn of your crank.

To photograph the cartoons, the camera is placed in a fixed mount, pointed down on a board upon which the drawings are placed, and focused so that its field exactly coincides with the area of the drawing, which, for convenience, should be 8x10 inches or larger. Over the drawing is placed a plate-glass cover in a frame hinged to swing up out of the way when the drawings are being changed, and which fits down over the drawings tightly and firmly enough to prevent any wrinkles; in our own

camera-table at the studio we have, as an extra safeguard, a vacuum device which forces the glass down with a pressure of 1200 lbs. per inch. This, of course, is unnecessary in amateur installations, as is our motor-drive, which works through a clutch, and exposes one frame each time a button is pressed. A frame counter, however, is necessary, especially with sound. An ordinary Veeder counter will serve this purpose. It can be attached to the single-picture crank, and should have room for at least four figures.

As to the exact method of "sounding" cartoons, perhaps the best suggestion might be gleaned from a description of the way we make our "Oswald" and "Pooch" cartoons.

In the first place, we have to have an idea to start with. From this idea I prepare a scenario. I cooperate with the musical staff in this, fitting the action and the music together. The scenario is partly drawn and partly written; it has on it the "key drawings," which are merely rough sketches of the scene, suggesting the action. Below each drawing,



Each character is drawn on a separate "cell"

I describe the action. Above it is the musical outline. This is worked out so that we know definitely that any specified action will occur at a certain bar of music—or, to put it the other way around, that at that definite bar of music, a definitely known action will be taking place. The standard projecting-speed for talking pictures—either 35mm. or 16mm.—is 24 frames per second. Therefore, we use 24 frames as our unit, and arrange our music so that we begin a new bar each second—or 24 frames. By this means, we can be sure that if we have a certain sound effect in bar No. 100, its accompanying action will be made in frame No. 2400.

Having worked out the action and music scenarios so that they synchronize perfectly on paper, and so they make the film-footage required for our release, we are ready to proceed. The music department makes its orchestral arrangement of the music, and records it. Meanwhile, the cartoon department makes its cartoon film; when both are completed, we know beyond doubt that the two will fit together perfectly. If someone is to kick Oswald, for instance, we can rest assured that the kick's accompanying "Klunk!" will be in the sound track, exactly in its place to the frame, even though the sound is recorded as much as three weeks or a month before the kick is drawn and photographed.

So much for that: now for the cartoon itself. As anyone who has an amateur camera knows, moving pictures consist of a series of tiny still photographs taken in succession on a strip of film, with each picture just a little different from the one before it. Well, in making a cartoon, we merely



The camera set-up used in making animated cartoons

draw these pictures and photograph the drawings in order: the result on the screen is the same—an illusion of movement. The movement can be made as fast or as slow, as smooth or as jerky as we wish merely by the spacing of the drawings of the individual phases of motion, and by the number of frames allowed for each drawing. For the smoothest action, use closely-spaced drawings, allowing one frame per drawing. For jerky action, space the phases farther apart. To speed the movement, use one frame per drawing; to slow it down, use more frames for each drawing. The best cartoon practice, I think, is to use moderately-spaced phases of movement, and photograph them giving each drawings two frames. A great help in learning animating—as this business of making these moving drawings is called—is the studying of slow-motion films taken of natural movements, which is easy with many of the better 16mm. cameras! study both the film on the screen, and the film itself, frame by frame. Study both slow-motion and normal films—and then work hard, and you'll have it.

From our scenario, we begin to get into the specialized work of mass-production. One man specializes on the backgrounds. These are made on paper, usually as combination pen-and-ink and wash drawings. We cannot go in for too fine gradations, but confine ourself to a fairly limited scale of grays, in addition, of course, to black and white.

At the top of these paper-drawn backgrounds are two punch-holes, very accurately spaced. These fit over standardized pegs on the background-artist's board, corresponding pegs on the action-artist (or animator's) board, and upon the camera-table. They are what keep the figures in their proper places on the background.

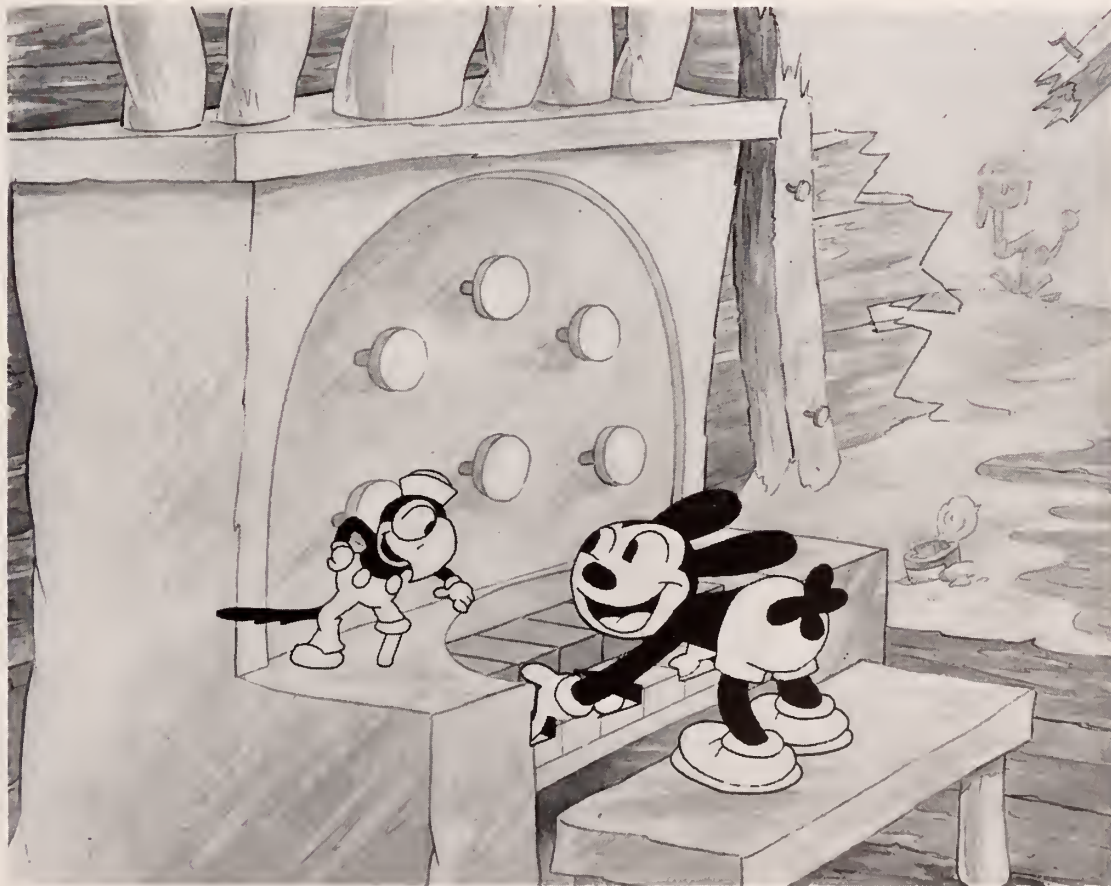
The figures are first drawn on paper, in pencil, by the animator. Then they are traced in ink onto thin celluloid. The black areas are filled in—on the back of the "cell"—with India ink, while the white areas, through which the background must not show, are similarly backed with Chinese white. The areas around the figure, of course, through which the background is to be seen, are not backed at all. When used, these cells can be cleaned with ordinary soap and water, and used again and again until they become too scratched and dirty to be usable.

Now, of course, there are a number of short-cuts in animating. For instance, if we have Oswald in a scene where he is standing still, but talking, or gesticulating, we don't need to draw his body every time: instead, we draw him a body on one cell, and his head or arms, or whatever moves, on other cells; thanks to the registering-pegs, the two will be in their proper relation, and we won't be embarrassed by seeing "Ozzie's" body standing still, and his head talking busy away somewhere else.

Similarly, if we have more than one character that is to move in a scene, each character may be drawn on a separate cell—or cells. Too many cells, of course, will spoil the picture, but we can safely use three or four at once—sometimes more, if the cells are clean, and the light good.

When a character is to repeat a movement, we can naturally use the same cycle of cells as often as may be desired; similarly, when, for instance, we want hundreds of animals to pour out of a house, we can make a cycle for them, drawing them all on the same cell, and using a series of such cells for the cycle, which can be continued indefinitely.

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The "cells" superimposed on the background for completed picture

Skylarking with a Camera

by **GEORGE W. HESSE**

AT ONE time or another every cine enthusiast who has ever done any flying has attempted to capture the zest and thrills of his flight with his camera. But what a keen sense of disappointment when one's first air-scenes are flashed upon the screen and they are blurry, dull, jerky and very unlike the crisp, clear, breath-taking stuff one sees in the theatre.

The amateur invariably concludes that he lacks some piece of equipment which enables the professional to secure such wonderful scenes. A special camera, film or lens which is beyond the reach of one to whom cinematography is a hobby. And so he regretfully gives up all hope of filming in the sky and bemoans his fate.

Not at all. The professional results have been obtained because of years of study and experimentation. Thousands of dollars have been spent in learning the secrets of air filming. Special cameras, lenses or films aren't a necessary requisite of successful aerial photography. There is no reason why the amateur cannot secure the less spectacular scenes equal to those taken by his professional brethren.

Here only a few salient features will be stressed to set you upon the road to successful picturization of your aerial jaunts. Much has been written on what to film or how to scenarize your aerial adventures. Not enough has been written on how to go about the filming. We will confine ourselves to the "how" and the "what" will be purely incidental.

Any camera can be used. If you have a very complete model with several lenses, choice of operating speed and other refinements, so much the better. But don't let the lack of such a camera deter you. Remember a two dollar Brownie in the hands of an expert is often superior to a two hundred dollar Graflex in the hands of a tyro. The same holds true with aerial work, but you must, at the outset, realize the limitations of your equipment and not be disappointed if you fail to secure something which is beyond the capabilities of your instrument.

Filming in the air is precisely the same as filming on Terra Firma. Focusing is the same whether you use the camera horizontally or vertically. Your lens will always be kept at infinity except, of course, if you wish to photograph some part of the plane in which you happen to be. As always your lens stop will depend on prevailing light conditions. However, in general, you will require a smaller stop for any given light condition as compared with filming under the same light condition on the ground.

For example, suppose you were shooting a rather fetching landscape, say a pretty composition of field and meadow and trees. Fleecy white clouds are in the sky and the sun is bright. Your lens is admitting an abundance of light. You would, under these conditions, probably be stopped down to f. 16. On the same day you make an airplane flight with the intention of filming another plane. Lighting conditions are unchanged. However you are photographing a goodly portion of sky and are thus admitting still more light to the film. In order not to overexpose you would have to stop down to about f. 22, a stop scarcely ever used when filming on the ground.

Don't be amazed at such a small stop . . . it may even be too large under certain conditions. If you are at all in doubt as to the stop to use, an exposure meter is a very useful adjunct to good filming. **Rely on it.** Don't think that the reading is too small. A Cinophot or a Justaphot is an ac-

curate scientific instrument and far supersedes the eye when it comes to measuring and judging reflected light, the light you photograph by.

Most failures when it comes to filming in the air are attributable to minor faults of technique. But the minor faults add up and soon the result is far from what it should be.

A filter is a great aid in securing crisp, clean-cut detailful pictures. When shooting in the air it is an absolute essential. You need a "minus blue" filter in order to cut the ever prevalent haze. Especially over cities there is always a haze due to dust and smoke from factories not to mention the naturally present water vapor. All this haze would catch, reflect and dissipate the light coming from the scene. This would cause a general flatness and a muddying up of detail. It can be circumvented to a considerable extent by the use of the proper filter.

The proper filters, as before mentioned, are the "minus blue" filters. They are yellow in color and are sold under a variety of trade names but are usually referred to as the Wratten "K" series. There are four in this series, the K1, 1½, 2 and the K3, each one being more dense than the preceding one with the K3 the most dense of the lot. Another "minus blue" filter is the Wratten "G", a yellowish orange filter more dense than the K3. The "G" filter has an exposure factor of approximately 5 with panchromatic film. With orthochromatic film it, of course, has a factor of approximately double.

For extreme overcorrection and for cutting the most amount of haze we must use the red filters, the 23 or the 25A. They can be used only with Super-sensitive Panchromatic film and with this film have a factor of about 6.

Never use orthochromatic film in connection with sky work. Use Pan or Super Pan and you can, with the aid of filters, secure the finest results obtainable. Besides, the colors you will photograph from the sky, the greens, browns and blues of open country and water and the dull greys of the cities will be rendered with more contrast by the Pan emulsion. The Pan film can't do it alone, it must be helped out with a filter. The filter, of course, holds back the light which comes from the haze (blue light) and permits the other light to penetrate through it, the filter, to the film.

When actually filming do not rest the camera on any part of the plane. If you do vibration from the plane will be transmitted directly to the camera and produce a very hard-to-look-at result. Hold the camera firmly in your hands. In this way your body and arms will damp the vibrations.

Don't attempt to film straight down, unless you are quite high in the air, say at least a thousand feet. Below that the speed of the plane in relation to the ground is too great to permit the proper registering of details and all the objects will be blurred. The higher you are, of course, the smaller will be the image of any given object. To secure a large image you would have to use a telephoto lens.

In any event a vertical shot straight down produces a rather uninteresting result. It is far better to film away from the vertical, either in the direction the plane is traveling or in the opposite direction. A full side shot from the plane is another bad thing to attempt, unless you are very high in the air, resulting again in a small image. The side shot, unless of another plane, would also produce a hard to look at effect.

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Transparency Projection Process

(Continued from page 15)

Once photographed, the negative, for best results, must be developed especially for transparency work. It must be perfectly developed, and held rigidly to definite standards of gamma and density. The print, too, must be made painstakingly, and exclusively for this work.

In making the actual process shot, the greatest care must be exercised. The projector and camera must be in perfect condition—and maintained exclusively for this work. The lighting must be arranged with special care. Every detail must, in a word, receive the most painstaking attention.

In my own department, I personally photograph the background plates whenever this is at all possible. If such plates must be made elsewhere, by other cinematographers, I supply them with extremely detailed instructions, and see to it that their equipment is in the requisite state of perfection.

For the development of our negative, we maintain a special laboratory, entirely independent of the studio laboratory. This laboratory, though small, operates with a precision and a degree of control impossible in studio or commercial laboratories handling the usual volume of production. In our developing-machines, for instance, the strength of the solutions is automatically maintained at a predetermined standard, the flow and filtering thereof arranged so as to insure absolute physical and chemical purity of the solutions, and cleanliness of the apparatus. The temperature is automatically held within one degree of whatever temperature may be desired. Most important of all, the developing-machines themselves are unique in that they permit absolute control of the time and speed of the processing; any phase of the process may be accelerated or decelerated independently of any other part of the machine in order to produce the precise effects desired.

The printing is done with equal care, on either our rebuilt Bell & Howell continuous printer or special optical printer. By these means we are enabled to produce background plates of the exact quality needed for any individual scene. The negatives are almost invariably photographed sharp, so that we can either use them as originally made, or, through the optical printer and the customary control in the exposure and development of the positive, produce prints with any degree of softness, diffusion, or contrast that may be desired—yet without impairing the negative for use in further scenes.

When photographing the composite picture, I supervise the lighting balance myself, closely collaborating with the production cameraman at all times. Except in such cases as occur when the process shots are all made at the end of a production's schedule, and the production cameraman transferred immediately to another assignment, I always prefer to have the man who has photographed the production work with me in making the transparency scenes. In that manner, we can between us (and to date the production cameramen have all cooperated perfectly with me) match the lighting of the projected scenes to that of the remainder of the production perfectly, without sacrifice of the type of lighting needed to insure a successful transparency shot.

By virtue of this close and friendly collaboration, and by the unusual degree of control possible in our laboratory processes, we are able to match successfully any style of cinematography. By means of our exceptional laboratory control, we are able to take a background made by a man who works in a style radically differing from that of the production cinematographer in question, and match the remainder of the production with absolute fidelity, for we can alter the contrast, density and general quality of the background plate to suit the scenes into which the composite shot is to be cut. We have successfully made backgrounds photographed on rainy days appear to have been made in the sun, and vice-versa.

The only thing impossible is to remould a day scene into a night-effect, or the night-effect into a day scene.

We have, naturally, built up a sizeable library of background plates of all types. These negatives can be used repeatedly whenever a background of their particular genre is desired, for, as has been pointed out, we can alter the quality of prints optically, and through the use of different foreground sets and treatment, we are able to alter the composition of the plate as well, using all of it for one picture, a part for another, another part for a third, or using the same part—with different foregrounds—for successive productions. I have recently, for instance, employed the same shot of a group of dancers on a ball-room for several different pictures; yet we defy anyone to recognize that the same background has served in both instances.

I have, for the past three years, been working on a similar process to enable the use of still photographs for the same purpose. The results are proving extremely satisfactory, although the process is still in the experimental stage. The same facility in altering composition, quality, etc., is possible with this method, and it is even possible, in some instances, to introduce a limited degree of movement into parts of this motionless background.

It is only natural to decide, at this point, that such a process must, if adopted, inevitably mean the elimination of sets, of art-directors, or extra-players, and of many other workers. Such is not by any means the case. Such a process inevitably has many limitations; it is a valuable supplement to conventional methods, but by no means a substitute. No matter how completely we perfect such a process, we must still have sets for a great part of our action. We must still, then, have art-directors, carpenters, painters, decorators, set-dressers, and property-men to make these sets. We must still have extra-players to dress our sets. We must still have electricians to light them.

The real utility of such a process is quite different. Being limited, as it is for the most part, to serving as a background for down-stage action, it will furnish backgrounds for scenes which might not otherwise be made. For instance, let us suppose that our principal players are to meet for the first time in a hotel lobby, but that this set is not required in any other part of the picture but this one scene. In the normal course of production, such a set, required only for a single scene, would be regarded as too costly—and accordingly, would not be built. The action would be shifted to some set already built, or bridged over by dialogue. By means of this process, however, an ordinary 8x10 still of some such set previously constructed might be used as a transparency background-plate—and the scene made as written, adding several thousand dollars worth of production value to the picture at a very insignificant cost. If, on the other hand, a major part of the action was to take place in such a set, the only logical thing to do would be to build the set, for only thus could the set be properly dressed with both properties and extra-players to make the effect realistic, and only thus would the director and cinematographer have the requisite freedom in playing their action on the set.



Hansen Withdraws from "Rico"

HAVING accepted an offer from the Fox Film Corporation to assume the position of director of sound recording, E. H. Hansen announces his complete withdrawal from the ownership and organization of the Radio Installation Company, manufacturers of "Rico" sound recording equipment. Announcement from this firm states that the concern will continue as formerly under the direction of Wilford Deming, Jr.

New Kodaks From Eastman

THE Eastman Kodak Company announces five new Continental model still cameras to the American trade. These cameras are manufactured in the Stuttgart, Germany, factory of the company known as the Dr. Nagel works, and meet the desires of the "advanced amateurs" of America who are turning more and more to the European type of smaller camera.

The five new Continental Kodaks are known as the Kodak Pupille, Kodak Recomar 18, Kodak Recomar 33, Kodak Ranca and Kodak Vollenda. They use Kodak film, roll or pack, depending upon model.

The Pupille is a compact instrument with an f.2 lens. The over-all dimensions of this camera are $3\frac{3}{4}$ inches by $2\frac{5}{8}$ by 2 and its weight is 14 ounces. In operation it is held close to the eye, recording what the eye sees.



The Kodak Pupille Camera

The Pupille can be focussed to take pictures at distances as short as $2\frac{1}{2}$ feet. A detachable periscopic range finder that comes with the camera determines distances. The speed of the lens—five times as fast as an f. 4.5 anastigmat—makes the photographer practically independent of light conditions.

Supporting the lens of the Pupille is a Compur shutter, with a range of speeds from 1 second to $1/300$, in addition to bulb and time. A revolving scale built into the camera shows the depth of focus obtaining at any focussed distance with the various diaphragm openings. For instance, with the camera focussed at 13 feet and the diaphragm open at f. 5.6, the indicator would show everything farther than 10 feet and nearer than 20 feet from the camera to be in focus.

The direct-view finder is self erecting. The lens is brought into picture-taking position by a precision spiral mount, controlled by a lever. When the range finder is in position, its eye-piece is just beside the view finder, noticeably convenient for use in obtaining the accurate distance reading necessary for close-up photography with wide diaphragm openings. A detachable cable release will be supplied with the five Continental Kodaks. The capacity of the Pupille is 16 exposures, $13/16$ by $1\frac{9}{16}$ inches, on "vest pocket" (Number 127) roll film.

The two Kodak Recomar models, differing only in size, will be imported for the benefit of photographers who wish to use film packs or plates or cut film and thus to gain access to the variety of color-sensitive and speed emulsions available in those forms. The lens is an f. 4.5 anastigmat. The speeds of the Compur shutter equipping the Recomar range from 1 second to $1/200$ for the Model 33 and to $1/250$ for the Model 18, with time and bulb.

The Recomar 18 uses $2\frac{1}{4}$ by $3\frac{1}{4}$ film packs, $2\frac{1}{2}$ by $3\frac{1}{2}$ cut film, or plates $6\frac{1}{2}$ by 9 centimeters. The 33 uses $3\frac{1}{4}$ by $4\frac{1}{4}$ film packs or 9 by 12 centimeter cut film and plates.

A self-timer is built into each Recomar, permitting the photographer to get into the picture himself if he so desires. The direct-view finder is of the European wire frame type.



The Recomar Camera

In addition there is a reflecting finder, adjustable for horizontal or vertical pictures. A spirit level appears on the cameras. Focussing is done either with a scale and micrometer screw or with the ground glass back accompanying each Recomar. A double bellows extension—with a completely rigid bed—and convenient provision for using supplementary lenses are other features of the Recomar. Full double bellows extension for the Recomar 33 is 11 inches, with slightly less extension for the Recomar 18. The versatility of the Recomars enables them to be used for copying as well as to meet the more usual requirements of photographic amateurs.

The Ranca has an f. 4.5 anastigmat lens. In size and weight the Ranca is almost identical with the Pupille. Picture size is the same, with sixteen images recorded on the ordinary 8-exposure of "vest pocket" film. The lens, mounted in a Pronto shutter possessing a range of speeds from $1/25$ of a second to $1/100$ and with time and bulb, moves into picture-taking position on a spiral mount. Focussing range is from infinity down to $3\frac{1}{2}$ feet. The Ranca has a self-erecting direct-view finder and a built-in self-timer.

The Vollenda is slightly larger (3 inches by $4\frac{1}{2}$ by $1\frac{1}{4}$) than the Ranca in dimensions, but its picture size is the same. The anastigmat lens equipping the Vollenda is an f.3.5. The lens is put in picture-taking position by a hinged front and a bellows extension which automatically spring into rigid position when a button is pressed. The Compur shutter has speeds from 1 second to $1/300$, and time and bulb. The focusing range goes down to about 3 feet.

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Why Blondes?

(Continued from page 12)

ever, when the wigs are properly made and applied, this prejudice has no foundation. It has been my experience, too, that this objection to wigs is never found among the people who actually wear the wigs, but among the executives—producers, supervisors and sometimes directors; men who are seldom in a position to have had personal experience with the merits or demerits of wigs, and whose objections are motivated by a fear that the production might suffer by the employment of such an expedient.

If wigs were what they were only a few years ago, these objections would certainly be justified; but within the last few years, wigs have not only been immeasurably improved, but absolutely perfected. This is, I realize, a very broad statement to make, but it is none the less true. From my own personal experience I can state that in no instance where a properly made and applied wig has been used has the result been in the slightest degree short of absolute satisfaction. As an example, in one production upon which I worked a short time ago, no less than seven members of a cast of nine—among them some of the greatest players in pictures—wore wigs; and in none of the many reviews of the picture was this fact mentioned. It was not, so far as I could learn, even noticed by the critics, most of whom knew the players more or less intimately.

The credit for this perfection of wigmaking belongs entirely to those splendid artists and gentlemen, Ernest and Percy Westmore. These men are not merely wigmakers, but artists. They come of a long line of wigmakers, and they have so perfected the technical and artistic phases of their craft that their products defy detection, not alone by the eye, but by the camera as well.

Therefore, in cases where the natural hair of a player is not suited to such alternative treatments as dyeing or bleaching, or has been injured by incompetent manipulation, a wig is not only the obvious recourse, but an extremely satisfactory one.

A wig may, naturally, be of any color or texture desired; but it may also be of any desired length—a feature which gives the wig a decided advantage over natural hair. For if a player whose natural hair is long is cast, let us say, in a part requiring bobbed hair, she need not sacrifice her hair for the part, for wigs may now be worn over long hair without increasing the apparent size of the head. Conversely, if a bobbed-haired player is cast in a long-haired role, she need not grow her hair out for the part, for the wig will prove entirely satisfactory. Furthermore, the wig may be made either to match the individual's natural hair in every respect, or in any shade, color or texture that will most perfectly set off the wearer's personality, or suit the part. There is, too, an added convenience in that the wearer need not spend an undue amount of time in the hairdresser's establishment, for the wig can be placed on the block in the makeup shop, and dressed during the night, to be ready for wear in the morning, at which time it is easily and quickly applied.

In the far more rare instances where men are required to alter the coloring of their hair, a wig will again serve the purpose effectively, while, of course in cases where the man's natural hair is too thin, toupees are frequently and successfully employed.

To briefly summarize the matter, wherever a change in the coloring of a player's hair is indicated, either to increase that player's photographic or personal effectiveness, to develop new facets of the personality, or to complete a definite characterization, two methods are possible: the coloring of the natural hair may be altered by means of dyes or bleaches, or a wig may be used, with perfect satisfaction in either case. There is, however, always this proviso: that whatever manipulation is done—whether it be the application of coloratives to the

Sound Cartoons

(Continued from page 37)

When a character is to walk across the screen, we can use a walking cycle, with multiple registration-punches to give him the movement; of course, in this case, the cells must be long enough so that their edges don't come into the picture at either end of the walk. When, on the other hand, our character is to walk, but remain in the same place, while the background flows past him, we can use an ordinary walking cycle, while the background is drawn on a long roll of paper, and moved by, a sixteenth of an inch or so at a time. This type of movement must, of course, be handled very carefully, so that the background moves naturally, and does not appear to skid by under the character's feet.

Photographing the drawings is simple. I have already described the camera-set-up; the lighting may be either by Cooper-Hewitt mercury-vapor tubes or by incandescent light. We use the latter; I think that for amateur use a pair of the new "Photoflood" bulbs would be excellent. The only requirement as to lighting is that the field be illuminated evenly, and that there be no reflections, either of the lights or of the camera and its supports, in the cover-glass.

When it comes to "sounding" the amateur cartoon, there are several methods. In the first place, bearing in mind the way I have described that we allow 24 frames to the bar, you can, with some experimenting, synchronize your cartoon to existing records, either the 78 r.p.m. commercial records, the new 33 $\frac{1}{3}$ r.p.m. "long-playing" records, or the 33 $\frac{1}{3}$ r.p.m. theatre sound-effect records made by several of the photograph companies. The 33 $\frac{1}{3}$ r.p.m. records are the best, as they will last long enough for a 400-ft. reel, and, too, most of the 16mm. sound-projectors are made to take them. In addition, you can record your own sound on these records by means of the new Victor, R. C. A., General Electric and Greybar home-recording phonographs, or through one of the several agencies that specialize in making sound-effects for 16mm. films. If you haven't a sound-projector, it is possible, though difficult, to synchronize your ordinary projector with an electric phonograph. The results aren't, of course, perfect, still—it can be done, with patience.

There, in a few words, is an outline of sound-cartooning. It is difficult, and requires patience—but it provides a deal of enjoyment, and a type of film that is rarely seen on amateur programs—and therefore doubly welcome to home-movie sated audiences.

natural hair, or the creation and application of a wig—must be done by the most competent of operatives only. When this precaution is followed, everyone concerned—the producer, the director, the cinematographer, and the individual player—can be assured of perfect satisfaction and absolute safety. Moreover, under the guidance of such specialists in this art as the members of the Motion Picture Makeup Artists Association, one can be certain of obtaining not alone the best of such treatment, but also treatment that will make the most of one's actual and photographic personality.

A Good Record

TWO years of daily operation without a single interruption during a performance and without having even been inspected by a service engineer is the record established by a Photophone Type F sound reproducing unit in "The Imperial Talkies" theatre, operated by Madan Theatres, Ltd., at Bangalore, India, according to a letter addressed to the foreign department of the RCA Victor Company by A. W. Smith, Manager.

Mr. Smith's letter was written on the second anniversary of the installation of the Photophone apparatus in his theatre.

EQUIPMENT PRIZES . . .

to be given winners in the

AMERICAN CINEMATOGRAPHER

\$1,000.00

Amateur Movie Contest

In addition to the four cash prizes, announced on the opposite page, the following prizes will be awarded by various equipment manufacturers and dealers:

The BELL & HOWELL COMPANY will also present two equipment prizes—First, a choice of a Filmo 70DA Camera, listed at \$280.00, or a Filmo Model J. L. Projector, listed at \$298.00. Second, a choice of any Standard Cooke Telephoto Lens, priced from \$60.00 to \$95.00. To be given to prize winners who made their pictures with a Filmo. The EASTMAN KODAK CO. will present a Model K Cine Kodak, with a f. 1. 9 lens, complete with carrying case, priced at \$150.00, for the finest example of photography in an out-of-doors picture regardless of whether it wins a cash prize or not and without consideration of story subject. MAX FACTOR MAKEUP STUDIOS will present one of the famous Max Factor Make-up Kits, completely equipped, to the winner of first prize of \$500.00. HOLLYWOOD FILM ENTERPRISES, INC., offers a Model B Cine Voice, Home Movie Talking Picture Machine, complete with carrying case, priced at \$129.00, to be given to that person or Amateur Club, located in California, who enters the best 16 mm. or 9½ mm. picture from California, regardless of whether the picture wins a cash prize or not. In other words, the prize goes to California's best entry. This home talkie equipment may be attached to all projectors, either 16 mm. or 35 mm. It makes any projector a talking picture machine. HOME MOVIE SCENARIOS, INC., offers two prizes as follows: To the winner of first prize of \$500.00, one Scenario (choice of entire group), one H.M.S. Matte-box, choice of any H.M.S. Filter, and one H.M.S. Scene Slate. To the winner of second cash prize of \$250.00, one H.M.S. Matte-box and choice of any H.M.S. Filter. In case the picture winning first prize is made from an H.M.S. Scenario, an additional cash prize of \$100.00 will be paid by Home Movie Scenarios, Inc. If second prize is made from an H.M.S. Scenario, an added prize of \$50.00 will be awarded; and an added prize of \$25.00 will be given winner of third prize if made from an H.M.S. Scenario. METEOR PHOTOLIGHT COMPANY will present the winner of FOURTH cash prize the following valuable lighting equipment: A Meteor Double Photolight complete with two 500 watt NERON bulbs, retail price, \$30.00, a Meteor Photolight Tripod model, complete with NERON bulb, retail price, \$18.00, and a Meteor Photolight Table model, complete with bulb, retail price \$13.50. Value of prize, \$61.50.

AND—MORE PRIZES WILL BE ANNOUNCED

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. ¶ A total of **\$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of \$500.00 for what its judges consider the best 16 millimeter or 9½ millimeter picture submitted in this contest. \$250.00 will be given as second prize; \$150.00 as third prize; and \$100.00 as fourth prize, a total of \$1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after

the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9½ millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg., Hollywood, Calif.

Enclosed please find Check, or Money Order, for \$3.00 (\$4.00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year:

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It is understood that this subscription makes me eligible to enter your \$1000.00 Amateur Movie Contest.



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Chicago Pupils' Health Play Recorded by Movie Camera

A MOTION picture entitled "Grandfather Molar," showing the presentation of a dental health play by pupils of the Eugene Field School, Chicago, was given its premier showing recently before the bureau chiefs of the Chicago Board of Health, with the president of the board, Dr. Herman N. Bundesen, at the movie projector.

The movie depicts the story of the preparing of the dental play—how the desire for producing the play grew out of a motion picture health lesson, how the scenario was selected, and scenes and properties built or collected—and then shows the play itself as it was given in the school auditorium.

The picture was made with an amateur Filmo movie camera by W. F. Kruse, head of the Educational Department of the Bell & Howell Company, and Dr. L. W. Morrey, in charge of the dental service of the Chicago Board of Health. It was produced under the joint sponsorship of the Chicago Board of Health and the Chicago Dental Society.

The film conveys health information in an unusually interesting form to every school child who sees it. It will also be of great service, first, in inculcating the idea among schoolmen of teaching health as an integral part of the school curriculum; second, in illustrating to them how easily this sort of instruction can be furthered by the presentation of health plays as school projects; and, third, in showing teachers and pupils, by means of the movie itself, how readily such plays can be produced and presented.

Following its presentation before the Chicago health board chiefs, the movie was shown at a meeting of the Illinois State Dental Society at Springfield, Ill. before the Chicago Dental Society in Chicago; and at the National Council of Parents and Teachers at Minneapolis. It will shortly be made available for showing to teachers and pupils the country over. Applications for securing the film on loan may be addressed to the Chicago Dental Society, 185 N. Wabash Ave., Chicago. It is planned to loan it free to responsible schools and organizations on payment of transportation charges.

Screen Resurfacing

RESURFACING of motion picture screens by theatre personnel usually leads to unsatisfactory results, according to a report of the Projection Screens Committee of the Society of Motion Picture Engineers. Tests made by the committee showed that less reflection properties are restored to the screen when resurfaced by the theatre than when they are resurfaced by the manufacturer.

The tests showed that the reflection factor of 85% possessed by a new diffusing type screen is reduced to 60% after two years of use. When this screen was refinished by the exhibitor its reflection factor is increased to 65%, but when the same screen was refinished by the manufacturer the reflection factor was increased to 82% or only 3% less than its original factor of reflection.

"At first," says the report, "we were hopeful that surfaces could be renovated satisfactorily by spraying and painting with screens in place. However, it is our present opinion that resurfacing has not been generally successful as yet. It requires skill and experience and even with much care still leads to non-uniform reflection and cloudy effects which are obtrusively apparent. Whether or not methods will be later devised to eliminate these difficulties is problematical."

The report was read before the recent meeting of the Society of Motion Picture Engineers at Washington, D. C., by S. K. Wolf of Electrical Research Products, Chairman of the Projection Screens Committee.

AMATEUR Club Activities

Los Angeles Amateur Club

ANOTHER unusually interesting meeting of the Los Angeles Amateur Cine Club, Wayne Fisher, president, was held at the Eastman Kodak Laboratories on the evening of June 13. Mr. Don Jahraus, head of the Miniature Department of the RKO-Radio Studios, was the chief speaker of the meeting. He gave a fascinating talk on the making of miniature shots as done in the studios, and then offered to answer questions. If President Fisher had not finally stopped the questions, Mr. Jahraus would probably still be answering them, for many members are interested in trick photography. Two very beautiful reels in 35 millimeter were presented by John W. Boyle, former president of the American Society of Cinematographers. One of these reels was a travel picture depicting Sweden; the other Denmark, and both were in natural colors. One had a narrative sound track. Another interesting picture was a 16 millimeter subject furnished by Dan Clark, another former president of the American Society of Cinematographers. It was made while Mr. Clark was on location photographing a George O'Brien picture, and showed the actual making of a professional picture. The run-off of the winners in the monthly uncut film contest was staged, and Mr. E. F. G. Chapman won the grand prize.

Portland Cine Club

MEMBERS of the Portland Cine Club, E. J. Schon, president, and August Benz, secretary, enjoyed one of the most pleasing and educational meetings in the history of the club recently when Mr. Allen C. Woolley, of Eugene, Oregon, was the feature of the evening. Mr. Woolley described a simple cine micrographic apparatus he has devised, and showed several subjects photographed with it. He also gave a detailed description of a new stop motion device and gave a demonstration of microscopic kodacolor and stop motion kodacolor of flowers. Mr. C. V. Bracher of the Oregon Game Commission, also showed some very interesting pictures on wild life in Oregon. An added feature was a film showing Death Valley and the Sierra Nevadas from the air. This was sent by the Los Angeles Amateur Cine Club. Incidentally, the Portland Club is doing a picture of Oregon which it is expected will be more than unusual.

Greenbrier Club

ONE of the most progressive clubs in the country seems to be the Greenbrier Amateur Movie Club of White Sulphur Springs, West Virginia. The club issues a breezy little monthly publication called "The Spotlight," which is a real credit to the organization, and to Hal Morey, Editor and Club Secretary. The June issue was increased by two pages. Much enthusiasm was shown recently at the premiere of the club's latest film, "The Black Door," which is said to be of very unusual merit.

New Berkeley Club

A GROUP of thirty amateurs recently met at Berkeley, California, for the formation of an amateur motion picture club. Harold Hock presided as temporary chairman and much enthusiasm was shown at the first organization meeting. Representatives of the San Francisco, Oakland and Richmond clubs were present and gave short talks. An attractive program was presented which included a demonstration of the new RCA 16 mm. sound-on-film projector.

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Filmo Topics

THE AMATEUR movie maker will find much of interest in the June-July issue of Filmo Topics, the excellent little magazine which is published by Bell & Howell Company of 1801 Larchmont Ave., Chicago. If you want to receive this magazine free, just write the Bell & Howell Company, mentioning The American Cinematographer. The following is a partial list of contents of the current issue:

Better Vacation Movies

The second of a series counselling new (and old) Filmo owners in the use of their equipment.

So You're Going to Take Movies Abroad

A calendar of summer European events worth filming.—By Clara E. Laughlin.

A Seven Year's Dream

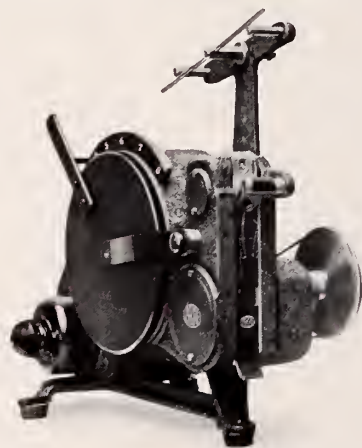
—has culminated in the introduction of the Morgana Color Process for FILMO Cameras and Projectors.—By Lady Juliet Williams (Inventor of the Morgana Process).

Getting the Crowd to Make a Movie

How a group of summer resort guests produced a photoplay.—By Harvey F. Morris.



New Arri 16 MM. Step Printer



A NEW Arri 16 mm. Printer is now on the market for amateurs and small laboratories. It is very simple of construction and easy to operate. It has been the aim of the manufacturers to put out a printer which can be bought by every home movie maker and the price is accordingly, though it shows high-grade workmanship.

The capacity is 100 feet negative and 200 feet positive film.

Some of the features are: a clutch which can stop the moving mechanism any time immediately by disconnecting the motor from the moving mechanism.

The specially designed light control, which makes it possible to adjust the light to the varying density of the negative **while printing.**

Trick work and title printing can also be done; any number of prints, for instance, can be made out of only one negative picture.

The printer is driven by an universal motor and weighs only about 7 pounds. Fritz Reichel of 3915 West Third Street, Hollywood, is representing the manufacturers.

Skylarking With a Camera

(Continued from page 38)

The best speed to operate the camera at is above normal, say 24 frames per second. If you are fairly low or if the air is rough a speed of 48 or even 64 frames can be used to advantage. If you shoot at a speed other than normal, don't forget to change your lens stop accordingly.

If your meter indicates *f*. 11 for 16 frames per second and you are filming at 48 frames per second you are admitting but one-third as much light as at the normal speed. Therefore you will have to open the iris so as to admit three times the amount of light. In other words you would have to open up to about *f* 6.3.

If you are using a filter it will be necessary for you to open still further. Supposing you are using a "G" filter with a factor of 5. Then you would have to open up to *f* 3.5. Unless you were using a speed lens that would be your largest aperture.

From this example you can see another reason why the use of the regular or ortho film is not advisable. With ortho the factor would have been about double and the aperture needed would have been far beyond the limits of your lens.

Always shoot from inside the open window of a cabin plane. Do not attempt to hold the camera outside the window. If the terrific back-wash of the propeller doesn't tear the camera from your grasp, the vibration it will cause will make the resultant scene valueless. You can secure any angle of view you wish from inside the cabin so why risk losing your camera by holding it outside?

Tape your filter to the lens barrel. Doing this will prevent the vibration of the plane from causing it to jog about and perhaps tearing loose altogether. Too, a bit of tape on the diaphragm ring will prevent that from jogging about and changing the aperture.

The hours between 10:00 A. M. and 3:30 P. M. are perhaps the best times for air filming. The sun is rather high then and the shadows aren't so long and grotesque as they are earlier in the morning and later in the afternoon.

Since most of your filming will be done on regularly scheduled air lines it is well to remember that planes wait for no one and as a consequence you will often have to shoot under unfavorable conditions. If you can circumvent these conditions and secure a worth-while result you will get a greater thrill out of seeing it on the screen than can be given by any plane ride.

A 2-inch FOCUSING LENS

for the

SIMPLEX POCKETTE CAMERA

Announced last month, this lens is now ready, and offers an increased utility to owners of the Simplex Pockette Camera who will now be able to use this most compact of instruments for long distance work and for closeups in Sport, Travel and general cinematography. Further information on request.



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f/3

\$45.00

\$2 to \$5 for change of finders

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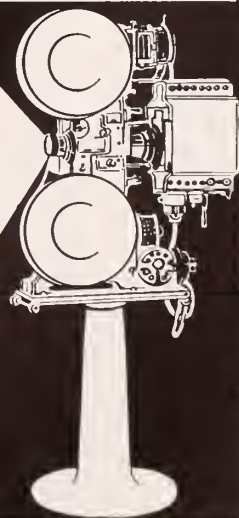
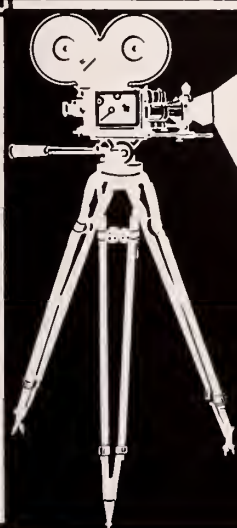
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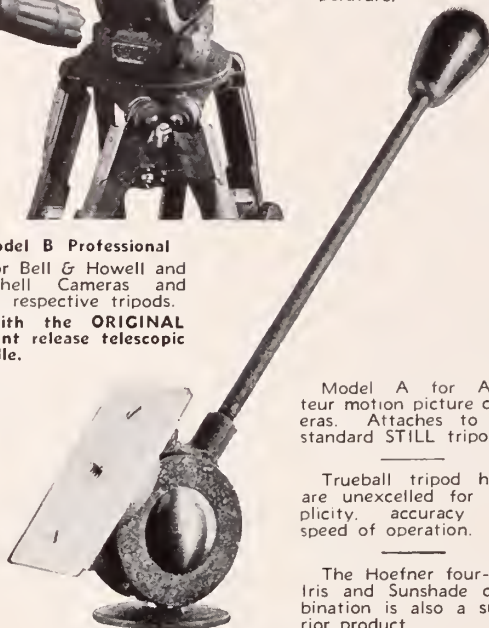
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New Camera From Zeiss

FOLLOWING the trend of the still photographic times, Carl Zeiss, Inc., will soon place upon the market a new camera of the "miniature" type that should prove of interest to all still photographers.

This new camera is called the Contax camera and will use regular 35 millimeter motion picture film, which will enable the photographer to use the fast, gray-back film that is used in the motion picture cameras in the studios. The essential features of the Contax camera as given by the manufacturers follow.



The New Contax Camera

An all metal focal plane shutter with speeds ranging from 1/25th to 1/1000th of a second, also bulb; speeds minutely accurate, and dependable. The shutter, therefore, is not subject to climatic influences.

A long base range finder, built-in, and coupled ingeniously with the lens; it focuses the lens automatically with an accuracy at least equal to that of a reflex camera. It is not necessary to measure the distance and then set the lens; the distance meter does this in one operation. The object may be viewed right up to the last moment and focusing adjusted accordingly.

The film is moved automatically every time the shutter is wound, so that double exposures are impossible. A valuable saving and convenience here.

There are other features worth noting. Although it is so compact and light in weight (22 ounces), the Contax is very sturdy, being made throughout of a strong, light metal. It is cleverly designed, down to the smallest detail, to provide for the maximum convenience, dependability and service.

A complete range of lenses will be supplied for the Contax, and these lenses will be readily interchangeable. Standard equipment is the Tessar f:3.5 of 2" focal length, or the Tessar f:2.8 of 2" focal length. There will also be available lenses with apertures of f:2 and f:1.5, telephoto and wide-angle lenses, supplementary lenses for short-focus work, yellow filters, and sunshades. Developing, enlarging and printing apparatus will be furnished at a later date.

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Amateur Movie Making

(Continued from page 34)

is not greatly slowed down. The matter of camera-angles is also important; especially with telephoto lenses. The shutter-apertures of most amateur cine cameras are not only large, but they are fixed. Therefore, the amateur cannot do as does the professional, when faced with the problem of obtaining absolutely clear pictures of fast movements, and reduce his shutter-aperture to a point where the exposure is sufficiently short to "stop" the movement. Therefore the amateur, who is forced to be content with a fixed exposure-time of from 1/36 to 1/24 of a second, must either choose angles at which the relative motion of the image is small, or arbitrarily cut the exposure time by increasing the camera-speed. The larger the image, the greater the relative motion on the film; therefore if we are using a telephoto lens, at normal speed, it is unwise to attempt to photograph full-screen pictures of individual runners, discus-throwers, etc., (in which the motions of the body are extremely rapid) directly side-on. The best angle is about a $\frac{3}{4}$ front-view, for in this case the movement of the image across the picture-area is minimized, yet the angle is still interesting. If, however, this most desirable viewpoint cannot be secured, and the action must be photographed from the side, the only alternative is to speed up the camera or be content with a smaller image. In making follow-shots of races, of course, if the camera is held steadily on one runner, that runner's motion will be fairly well stopped, though at the expense of the background.

But the greatest aid in preparing for such events is experience. So—why not come fortified by some? Take your camera with you the next time you go to a ball game, a cricket game, a track-meet, or (best of all) if you attend any of the local Olympic try-out meets. Learn from experience of the problems involved in making such films from the grandstand **yourself**—and you will learn more than any article or book can teach, for no writer can fully visualize your personal equation. Then, if you come to Los Angeles, remember that Hollywood is not far off, and that a hearty welcome awaits you at the offices of THE AMERICAN CINEMATOGRAPHER, and that both Editor Hal Hall and I will be glad to meet you, and to aid you any way possible.

Motion Picture Film

(Continued from page 30)

"fast" or "slow," "contrasty" or "long-scale," sensitive to light from various parts of the spectrum, and photographically responsive in still other significant ways. This control in emulsion making is responsible for the various types of motion picture film known within the industry.

For atmospheric control and other purposes, this typical film manufactory maintains the largest refrigeration plant in the world. Our readers may be interested to see in the next issue of the Cinematographer how the cold that is the product of this refrigeration plant, and the cleanliness that is a product of many precautions and activities, are as important a "raw material" of motion picture film as the cotton, the saltpeter, the sulphur, the camphor, the wood alcohol, the hides, the silver and the potassium bromide.

(To be continued)

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Morgana Color Process For Film Cameras and Projectors

FILMO cameras and projectors designed for taking and showing color motion pictures by the Morgana Color Process are announced by the Bell & Howell Company. This company states that it considers Morgana the best two-color additive process that has appeared.

In this process color is not inherent in the film itself but is obtained by special filters in the camera and projector in conjunction with special mechanism. Different types of mechanism are employed in the camera and projector respectively, the projector mechanism embodying a radically new principle never before applied to motion picture technique. It is this unique projector mechanism that is largely responsible for the outstanding results obtained, which include a total absence of the flicker which has heretofore seldom been dissociated from two-color additive processes.

The Morgana Color Process was invented by Lady Williams of Pontyclun, South Wales. This process we are informed, does not parallel the advantages of three color systems, but has these major distinguishing features:

1. Regular panchromatic reversal film is used.
2. Duplicates may be made just as from panchromatic reversal film exposed for black and white movies.
3. Any Filmo lens may be used. The filters in the camera are behind the lens seat.
4. Pictures may be taken under adverse light conditions. Merely open the lens one stop to allow for the two-color filters.
5. Screen pictures 10 feet wide may be shown with a Filmo projector.

The Bell & Howell Company states: "The disadvantages of the Morgana Process are less than those of any other two-color additive process. Color rendition, while not so faithful as by a three-color process, is nevertheless very pleasing and artistic. Slight fringing is prevalent with close-ups in fast motion, but is not considered objectionable. In any consideration of this process we must, of course, keep in mind its indubitable advantages of great photographic latitude, large screen images, and duplicate prints."



Enter the Audiographers

(Continued from page 10)

man a renewed interest in his work: if he were a member of the American Society of Audiographers, he would have definite professional standards to which he would consciously strive to adhere; if he were not a member of the American Society of Audiographers, he would have ever before him such membership as a goal to be striven for. Thirdly, by bringing the individuals directly responsible for recording the industry's output together, such an organization would be of immense value to the industry by virtue of the more facile interchange of ideas, methods and experiences. And, like the American Society of Cinematographers, it would become the proving ground for new equipment and methods in Audiography, and the starting-point for much of the artistic and technical research in the field of practical Audiography that is so urgently needed.

The greatest needs of the motion picture industry today are generally conceded to be improved morale among its workers, and greater cooperation between all of the members of its body politic. We have seen what the American Society of Cinematographers has done in its field in meeting both these needs; the American Society of Audiographers could do as much in its own field. We can be sure of the whole-hearted cooperation of the Cinematographers. They have shown us the way—shall we not follow?



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BRULATOUR BULLETIN

What's What

EASTMAN FILMS

Who's Who

IN KANSAS AND OTHER FOREIGN FIELDS

M-G-M has sent two of their crack cameramen into foreign fields for backgrounds. Charlie Clarke is scorching his dogs on the hot plains of Kansas shooting wheat and wheat and corn and corn. Johnny Mescal, in the meantime, is chasing all over Europe and lining up some very unusual background shots, which will be seen back of la Shearer, Crawford, Davies, Gable and other M-G-M luminaries.

Whispered information just slipped in over the wire to the effect that Charlie Van Enger and Joe Valentine are scheduled for early return to Europe to resume their work on special backgrounds for Fox. Both of these boys were over there last year, and much of their work has been seen in recent Fox productions.

What the Cameramen Are Doing to Keep Hollywood on Top

Kurrle in Canada:

As expression of his appreciation for their great work during his busy past season, Bob Kurrle is host to his camera staff on a real vacation, which at this moment seems to be flourishing very nicely, thank you. The boys are about a hundred miles north of Vancouver, and a letter comes from Bob describing the length and size of the fish they are catching. Some details of the letter are slightly confusing, but we gather the important fact that excellent bait may be purchased at about \$4.20 a bottle.

Polito to New York

Sol Polito, who has just finished shooting "Three on a Match," leaves this week-end for New York on a trip combining business and pleasure. The chances are Sol will shoot a quick glance at "Central Park." Expected back in Hollywood about August first.

Milton Cohen North

This Saturday night all the little magazines will be locked in their little closets in the First National camera building, and Milton Cohen will toss the key out the window and an hour later be aboard the boat in Los Angeles harbor, from whence he sails to San Francisco and other northern points, with side trips to Lake Tahoe, Yosemite, etc. Mrs. Cohen will direct the itinerary.

Garmes—"Smilin' Through"

Ordinarily, (frankly) we get our first thrill out of seeing a new production go into work in contemplation of the footage of Eastman super-sensitive negative that will be used in it. From time to time there are, however, exceptions: "Smilin' Through" is one of them. We

Hot Soup

THEY are preparing a special batch of "hot soup" at the M-G-M plant preparatory to receipt of the first shipment of negative which Clyde Devinna has shipped in from the Van Dyke Company, now shooting "Eskimo" in Alaska. First consignment is expected here about July 20th.

remember this charming, lovely story which came to the screen with another dainty star about ten years ago. Now it's the vehicle for Miss Norma Shearer, directed by Sidney Franklyn and photographed by Lee Garmes. This triumvirate on this production spells box office success regardless . . . of box office depression.

Marsh Back to M-G-M

Ollie Marsh has folded his umbrella—"Rain" is in the can—and Ollie joins forces with that merchant-director, Chuck Reisner, on the M-G-M production of "Father and Son," which will feature young Jackie Cooper.

Hal Rosson Finishing

Hal Rosson is completing production on the Monta Bell production with Jack Gilbert, "Downstairs," scheduled to start another at the M-G-M plant early in July.

Haller to Paramount

Ernie Haller has been sold down the river for one picture because of the closing at Warner Brothers-First National. He sets up his camera next week for one picture at Paramount, and is scheduled to return to the Burbank lot the first week in August.

Dickering For Gaudio

At the moment a major studio and the largest independent producer are dickering for the services of Tony Gaudio, who has just completed "Tiger Shark" for Warner Brothers-First National. One of the big bosses of the Burbank plant expressed to us his enthusiastic delight with the character of the photography achieved by Gaudio on "Tiger Shark." It is our guess that Tony's next assignment will be with the major plant.

Chinese Operas

A brace of Chinese operas go into production immediately. "The Bitter Tea of General Yen" starts this week at the Columbia Studios with Joe Walker at the camera.

Folsey to Start

GEORGE Folsey, who has been with Paramount (Long Island) New York since he was a little boy, is scheduled to take the camera on an early production at the Paramount West Coast Studios. Meantime George has been doing wonders with his golf score. When he arrived here from the east a month ago he was clicking Brentwood and Riviera around 84; now his score card totals 96s and 98s—that's improvement!

At Fox Hills the Chinese mystery play, "Chandu" is scheduled to start very shortly, and quite appropriately—James Wong Howe—the Scandinavian cameraman, will look after the photography.

Chick McGill East

Along with other cameramen who have treked east for their vacation is Chick McGill, who has leave of absence from the Warner Brothers-First National plant until the first week in August.

Kline With Hawks

Benny Kline is at the Camera for Howard Higgin, whose production, "The Thirteenth Man," gets under way at Columbia this week.

Mohr Finishing

Hal Mohr is winding up the photography of William K. Howard's production, "The First Year" at Fox Hills. Next assignment for Hal at the same studio comes up in about ten days.

Item:

Ernie Palmer is again bringing "ah's" and "oh's" from the boys in the projection room while they view the rushes of "After the Rain," which Jack Blystone is directing at Fox.

Hansen Returns to Fox

We are unofficially advised that Ed Hansen, formerly chief of the sound department at the Fox Movietone Studios, returns to the old job on July eleventh, at which time he will take full charge of the department. Congratulations are in order to Hansen—and to Fox.

LEO TOVER is turning in some very interesting shots on the George Archainbaud production "Thirteen Women" for RKO.

Cronjager on "Liberty Road"

Some most unusual effect shots are coming from the camera of Eddie Cronjager, who is photographing "Liberty Road" under the direction of Rowland Brown at RKO.

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(At left) Martin Johnson in Africa with two of his B & H Professional Cameras.

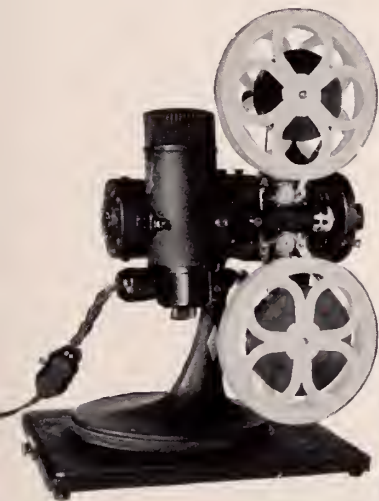


Bell & Howell professional cameras, excepting perhaps a thousand feet made on Eyemos. The professional cameras I have had for many years . . . one about thirteen years . . . and they are as good as new. As for the Eyemos, I have four and could not do without them. They are invaluable for quick work. As a matter of fact, I made most of my gorilla pictures with Eyemos and could never have made the wonderful films with any other camera. The gorilla pictures had to be made quickly and the use of bigger cameras would have been too slow."

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Filmo 57 Morgana Projector. Basically the 57-M 300-Watt, 110-volt Projector. Morgana color wheel instantly removable for showing black and white. Price \$210. Models with more powerful lamp, variable resistance, etc., slightly more.

Filmo 70 Morgana Camera. Five film speeds. Cooke 1 in. F3.5 focusing mount lens. 70-D type governor and spring. Morgana filters instantly removable for taking black and white or Kodachrome. Price, \$190 (including federal tax).



Now, the Morgana Color Process, invented by Lady Williams, of Pontyclun, South Wales, the best two color additive process yet developed, is made available to personal movie makers through a new Filmo Camera and Projector.

The Morgana Process has as its major distinguishing features: regular panchromatic reversal film can be used; duplicate prints can be made; any Filmo lens can be used; pictures can be taken under adverse light conditions; a 10 foot screen may be filled.

Color rendition, while not quite so faithful as by a three color process, is very pleasing and artistic. Slight fringing is prevalent with close-ups in fast motion but is not objectionable. Correspondence is invited. Details on your color work will aid us materially in advising you.

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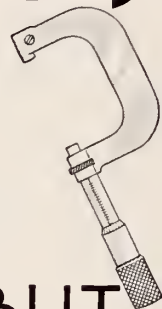
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Technical Editor, A. S. C.

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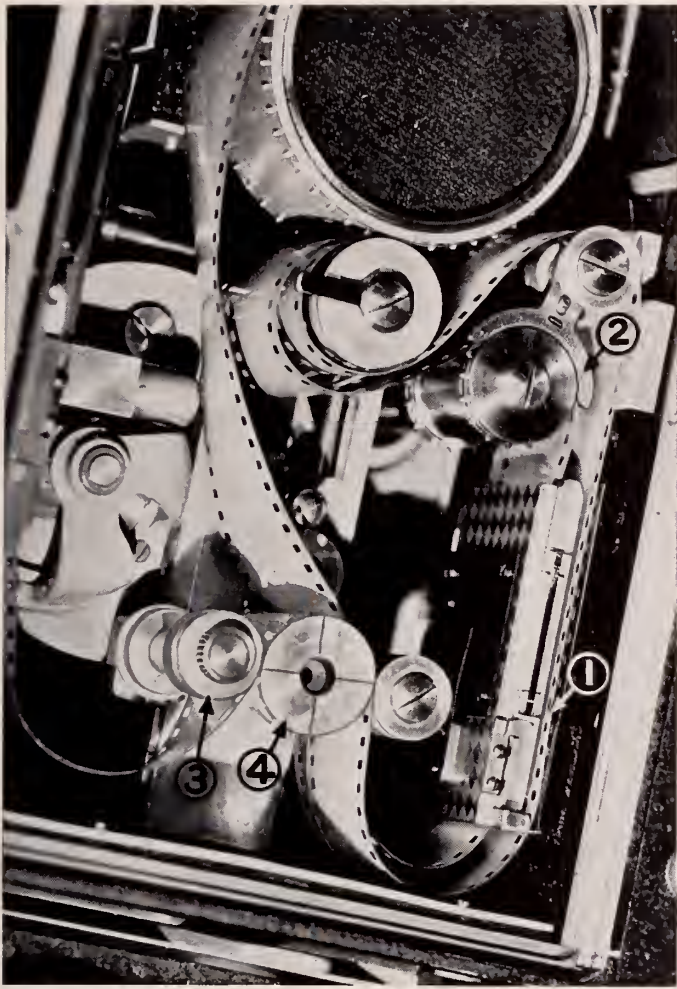
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Technical Accuracy for Motion Picture Sets

by **HARRY REYNOLDS**

Mechanical Design Dept., Paramount Studio

ONE of the most important objectives in the making of motion pictures is the creation of an illusion of complete realism. This is nowhere more apparent than in the design and fabrication of the settings before which the action is played. The photographing of this action is the focal point of the efforts of the entire studio personnel, the technique of everyone concerned—writers, directors, players, cinematographer, and all others—is keyed to realism: and if the set upon which their activities culminate does not equally express this mood, their work is proportionately affected. This need for accuracy has become increasingly vital with the world-wide spread of amateur motion picture photography: where, a few years ago there might be one person conversant with the possibilities of the camera, now there are hundreds of thousands who, seeing a palpably artificial set, will say, "Why didn't they photograph the real thing? They could—for I could do it myself."

This is especially true in the case of such specialized settings as ships, trains, and aircraft—all of which occur with some frequency in the course of ordinary production. Such backgrounds cannot be merely the product of a gifted architect or art-director, but must be designed by architects who are also engineers and specialists in marine, railway or aerodynamic design. Without this specialized skill in the design of such sets, the ordinary art-director (however skillful he may be as an architect) will almost invariably, in his efforts to enhance the pictorial qualities of the picture, commit some technical faux-pas; inserting some detail that could not possibly be there in actuality, or omitting some detail that would, in reality, have to be there. In either case, the effect would be the same: the illusion of reality would be lessened, or even destroyed, for some part of the audience. It might not be so important if but one sailor, or one railroad-man, or one aviator noticed the flaw but with perhaps two hundred release-prints of a picture on exhibition, each playing to four or five audiences daily, our one man multiplies himself into thousands whose pleasure is lessened, and whose opinion of the production, the star and the company suffers through one technical incongruity.

I am convinced that the only way to efficiently avoid such incongruities is to have two art-directors in charge of productions requiring such sets: one to design the normal settings, and the other to have complete charge of the design and construction of these specialized sets which require technical details unfamiliar to the ordinary architect. Such a man would necessarily have to be experienced in architecture, in motion-picture technique, and in the technical details of marine architecture, railway construction, and aircraft design. In this manner, the company would achieve a saving of time, of effort, and of money in addition to the assurance of technical accuracy in the sets.

Such a policy has to a limited extent been in effect at the Paramount Studio during the production of certain pictures requiring such specialized sets recently. The Art Department has handled the normal sets in the regular manner, while the Department of Mechanical Design and Construction designed and executed the special sets, in cooperation with

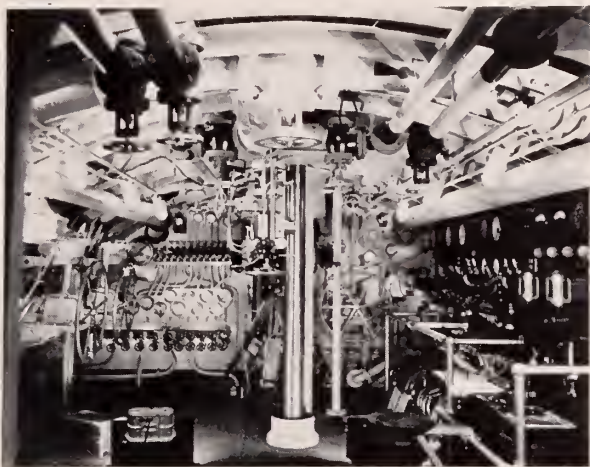
the supervising art-director. Although the plan has been operated in only a limited degree, it has nevertheless effected considerable economies. Were the two types of sets to be handled by the respective design-staffs independently, I am confident that even greater economies would be achieved.

Such a policy would be in complete accord with the recognized policies of studio management, as it would not entail duplication of work or personnel, but merely highly desirable specialization. A parallel may be found in the photographic work: one department handles the regular production camera work, a second, special-effects and miniatures, and a third the highly-specialized transparency process; and cameramen assure me that it could not be otherwise.

An interesting example of specialized settings created under this specialized designing arrangement are those used in "Devil and the Deep," which is now in production. A great deal of the action takes place within a submarine; and, of all naval architecture, submarines require the most specialized design. Therefore, the design and construction of the settings for this sequence was turned over to my department. I, in turn, entrusted the project to one of my associates, John Goodman, who is without doubt the most profound student of marine architecture in the motion picture industry. Inasmuch as I knew that Mr. Goodman had been responsible, both as an art-director and an engineer, for the ships in "Old Ironsides," "The Divine Lady," "Code of the Sea" and many other maritime films (both earlier and later than these,) I knew that the designs would be both accurate and photographically suitable. I was not, however, prepared for such outstanding designs as he produced, for, in consequence of the extreme reticence of the Navy Department on all matters pertaining to Submarine Service, neither he nor the studio Research Department had much material to work with. None the less, as the illustrations show, he produced a set which submarine men have assured me is 100 per cent accurate in every detail.

The action of the story required the main control-room of the submarine, the crew's quarters, and the forward torpedo-room. Since the action required that these be flooded, to represent the sinking of the submarine, few makeshifts in construction were possible. Furthermore, the "stock shots" to be used in the picture, showing the submarine running on the surface and diving, showed a boat of the "S" class of the U. S. Navy, there were many restrictions in design; it would not do, naturally, to show shots of an "S-boat," and then use interiors of the far earlier and smaller "R" class, or the more recent, and far larger "V" class. Fortunately, we found in the studio a man who had served not only in the submarine service, but actually on an "S-boat." That simplified matters to a great extent, in so far as technical details went; so between this assistance, and the meagre material in the way of photographs and drawings of submarines that were available, we produced a setting so perfect that, on the screen, I am confident, many Navy men will recognize their own ship—and wonder how in the world we got permission to use it!

Due to the nature of the action, we built the set complete; in fact, we virtually built the forward half of a regulation



Main control room of a submarine as built in the studio.

submarine. The material chiefly used was steel: it had to be, not only to give the requisite appearance, but to give sufficient strength to withstand the sudden rush of water as the boat is rammed and sunk; some of the compartments had to be flooded four or five feet deep with very real water! Obviously wood and plaster construction would not do for this purpose. We were all of us rather doubtful as to the effect of this box-like steel construction on the sound-apparatus, but the sound department assured us that they could record satisfactorily on our set; and such of the rushes as we have heard have been entirely satisfactory.

In order to enable the set to be properly photographed, of course we had to omit the hull plates on the upper third of the cylindrical hull. We built the reinforcing bulkheads, however, and as these were spaced exactly as though they were on a bona fide submarine, they presented the proper openings for the lights, yet masked each other perfectly, maintaining the desired illusion of actuality. As I have stated, the three compartments were built together, exactly as they would be in building an actual submarine. Part of the after compartment—the control room, which is in about the middle of a real ship—was removable, being mounted on rollers and rails, so that it could be moved out of the way when working in the crew's quarters. This proved to be a highly practical arrangement, as it facilitated the photographic work greatly; in the future, if such settings are again needed, we will know from experience that this sectional method of construction is the most economical.

The various fittings on the set were bona fide: all of the instruments—compasses, inclinometers, bank indicators, depth-gauges, air and water-pressure indicators, engine-room telegraphs, etc.—were obtained from various marine instrument firms. The controls—horizontal and vertical steering wheels, electrical controls, etc.—were fabricated in our own shops to authentic design. The many valves on the maze of air, water, ballast and fuel pipe-lines were regulation marine valves, obtained from local ship-fitters. The several periscopes were practical, and made—complete in all external details—in our own shops. In a word, our setting could very nearly be used in a bona fide submarine.

It is natural to think of a submarine as a small craft, and hence to conclude that a motion picture set representing only a part of a submarine as being a small structure. This is far from being true: our set—which represented approximately one third of the craft—measured 110 feet in length by 20 feet in beam, and nearly ten feet high. Of course, we made every effort to save both weight and cost in the construction; still, the completed set, being made largely of steel, weighed several tons, and the cost was considerable. The results

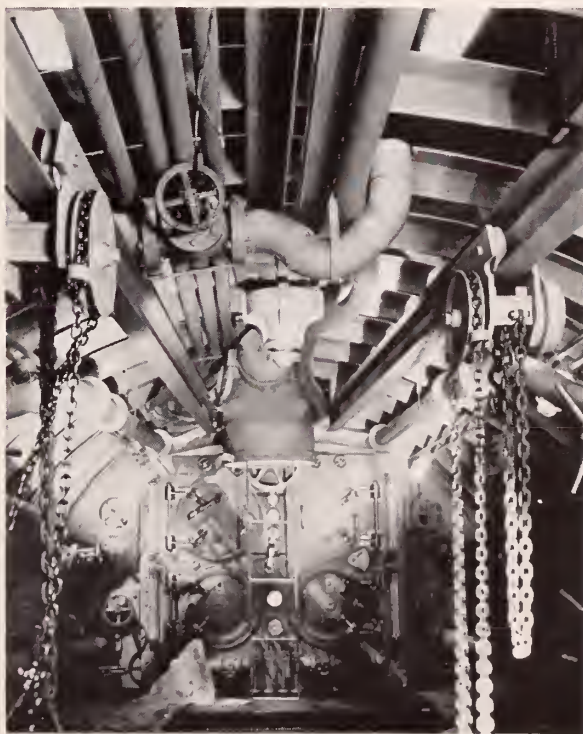
achieved on the screen, however, have proven eminently worth the effort and money expended.

But it is not alone in such intensely specialized settings as submarines that this specialized technical design is demanded. The construction of settings representing ordinary surface craft, railroad trains, and aircraft, likewise require specialized knowledge generally outside of the experience and training of the average art-director or architect. Frequently pictures require settings representing the interior of an ocean liner, for instance. Despite the palatial, hotel-like decorations of modern liners, there are a thousand and one little details which can only be known to a close student of marine architecture: and if these details are inaccurate, the set is in proportion a failure, for such inaccuracies tend to tear down the illusion of actuality. For example, in a recent production from another studio, in which the entire action transpired on a de Luxe liner, one of the major settings represented the stairway in the First Class passenger quarters. It was an artistic setting, but showed one glaring inaccuracy, which anyone who had travelled by sea would quickly notice: half way up the stairway was a landing, and from this landing was the door to the cabin of one of the principles. Such a thing is an absolute impossibility in marine architecture. The deck-lines of a ship must, for vital engineering reasons, be straight and unbroken from stem to stern; placing a cabin that way, between two decks, would break this deck-line, seriously weakening the entire structure of the ship!

In another instance—a picture now in production at our own studio—the script called for a third-class cabin on the S. S. "Ile de France." The director wanted the cabin to be definitely third-class, yet not too cheap looking. He suggested, as one way of gaining this end, making the cabin a legitimate third-class one, and the corridor from which it gave, a second-class one. This, of course, was incongruous. Finally, the workers in my department found that the corridors on such ships—first-class, second-class and third-class—are practically identical, solving the problem very nicely.

Similar problems constantly occur in the making of such productions. No one can possibly impugn the abilities of

(Continued on Page 27)



Interior of torpedo room of submarine constructed in the studio.

The Duplication of Motion Picture Negatives

by **J. I. CRABTREE** and **C. H. SCHWINGEL**

Communication No. 488 from the Kodak Research Laboratories

(Continued from Last Month)

IV. FACTORS AFFECTING GRAININESS DURING EXPOSURE AND DEVELOPMENT

IN THE foregoing tests the graininess of the original negative exerted a pronounced effect on the graininess of the duplicate negatives and prints. In order to eliminate this effect and to determine the influence of exposure and development on graininess, the following tests were made.

Lengths of the various films tested in Table I were given uniform flash exposures and developed by the rack and tank method. The degrees of development were determined from step tablet readings from exposed strips developed on the racks with the flashed films. The negative types of material were developed in the borax developer D-76 and the positive material in the positive developer, formula D-16.

It has been found throughout this investigation that whenever a negative emulsion was developed in a positive type of developer, graininess was greater than when the material was developed to an equal degree in the borax developer. The borax developer is not suitable for positive development, however, because of its inability to produce the necessary high gamma.

The graininess of the developed flashed strips was judged by the method described for all preceding tests. In these observations the assumption was made that the graininess of the photographic material was proportional to the distance from the eye of the observer to the screen.

Since the visual acuity of the observer was subject to variations due to such factors as adaptation level, fatigue, and general physiological conditions, allowances were made for these whenever measurements were made.

Before making measurements, the person chosen for the viewing was allowed to remain for a length of time in a room which had an illumination level approximating that encountered when viewing the screen. This preliminary precaution was

necessary in order to fix the adaptation level of the observer and minimize errors arising from variations of this. Numerous check determinations were made and in no case were values found which deviated more than 10 per cent.

Each screen test consisted of the projection of not more than 225 feet of film to be viewed, after which the observer was allowed to rest for a period of ten to twenty minutes before continuing. In this way errors arising from eye fatigue were minimized.

The values for graininess reported were the result of a large number of observations made by three observers of normal eyesight, which were averaged when drawing the curves.

A. Variation of Graininess of a Constant Density with Degree of Development

Lengths of the flashed film were developed for varying degrees to give gammas covering the useful range for each of the emulsions used. The exposures were varied to give a density of 0.8 in every case. The graininess ratios determined by projection were plotted against the gammas to give the curves shown in Figure 1. The results show that for negative emulsions the graininess increased very rapidly with increase in the degree of development, while for the positive types of film the graininess rapidly reached a maximum and then remained practically constant, or even decreased slightly with increasing degrees of development, over the useful range of the material.

These results seem to show why the method using a high gamma master positive and a low gamma duplicate negative, which were printed on positive and negative emulsions respectively, gave less graininess than the earlier recommended method in which both master positive and duplicate negative were printed on a negative emulsion and developed to a gamma of unity.

These experiments also confirm those of Carlton and Crabtree⁶ who predicted that "the graininess-gamma curve for a negative material over the useful range of gamma (0.5 to 1.0) is probably straight and rather steep, while the graininess-gamma curve for the positive (gammas 1.2 to 2.2) has a long shoulder which must be almost parallel to the gamma axis."

For this discussion it can be assumed that the graininess of a print is the additive result of the inherent graininess of the master positive and duplicate negative materials, although actually it appears to be somewhat less than this total. The graininess ratio of a flashed length of duplicating negative film, emulsion series 1505, developed to a gamma of unity was approximately 5.5 units, and a print from this on the same material and developed to a gamma of unity on this assumption would therefore have a graininess approximately double this, or 11 units. Considering a second example where the master positive was printed on duplicating positive film, emulsion series 1355, and developed to a gamma of 1.85 when the

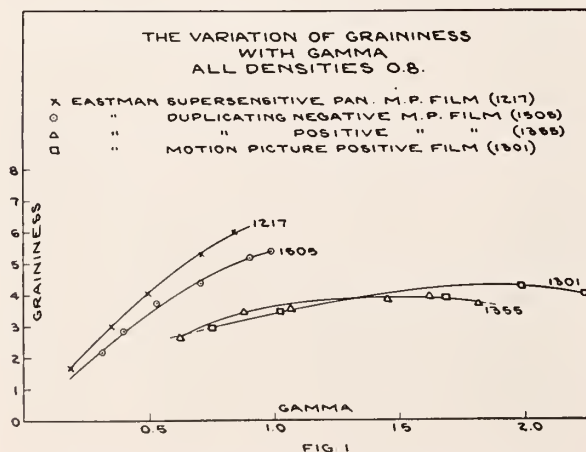


FIG 1

The variations of graininess with gamma, all densities 0.8.

6. Crabtree, J. I., and Carlton, H. C.: Some Properties of Fine Grain Developers for Motion Picture Film, Trans. Soc. Mot. Pict. Eng., No. 38, 406, 1929.

graininess ratio was approximately 3.8 units and then printing the duplicate negative on duplicating negative film, emulsion series 1505, developed to a gamma of 0.55 which furnished additional units of 3.8 (see curve in Figure 1) it is seen that the duplicate negative would have a graininess ratio approximating 7.6 units. It is apparent, therefore, that the graininess should be much less in the case of a duplicate negative prepared by the latter method than one prepared by the former method.

In Figure 1 the graininess curve for duplicating positive film is contrasted with that of motion picture positive film for the purpose of showing that the graininess ratio is lower for the duplicating material at high gammas.

B. Variation of Graininess With Density

Lengths of film were given varying flash exposures, and developed to the gammas recommended. It was considered that the graininess could not be judged correctly from these because of the varying screen brightness, so prints were made on motion picture positive film from the various densities, and exposed so as to give a density of 0.8 with equal degrees of development.

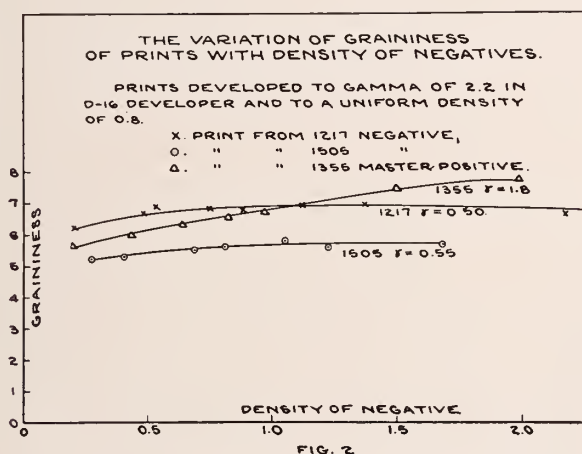


FIG. 2
Variations of graininess of prints with density of negatives. Prints developed to gamma of 2.2 in D-16 developer and to uniform density of 0.8.

The graininess ratios of these films were determined and plotted against the negative densities to give the curves of Figure 2, which show that for the master positive the densities should be as low as possible on the density scale, while in the case of the duplicate negative printed on negative materials, the graininess increases only slightly with increase of density of the negative. It is also seen that the graininess of Eastman Supersensitive Panchromatic film is greater than that of Eastman Duplicating Negative film, but the curves run parallel to one another.

V. FACTORS EFFECTING GRAININESS DURING PRINTING

A. The Effect of Loss in Definition on Graininess

Tests were made to determine the effect on graininess of imperfect negative-positive contact in printing. These were accomplished in two ways: (a) by adjusting the printer gate so as to permit the negative to be out of contact with the positive stock during exposure, and (b) by printing through a thickness of Kodaloid.

The results were similar in both cases and showed that whenever a loss in picture definition occurred there was also a diminution in graininess. The slight loss in picture definition was not objectionable in certain types of prints, particularly with close-ups where fine detail was not essential.

B. Effect on Graininess of Printing With Diffuse Light

The gate of a motion picture step printer was fitted with a piece of pot-opal glass in such a manner as to insure perfect contact between the glass and the negative during the printing operation. This arrangement permitted the printing to be carried out with diffuse light. Duplicate negatives and prints from these and from original negatives showed no appreciable difference in graininess, although printing with diffuse light slightly impaired the picture definition.

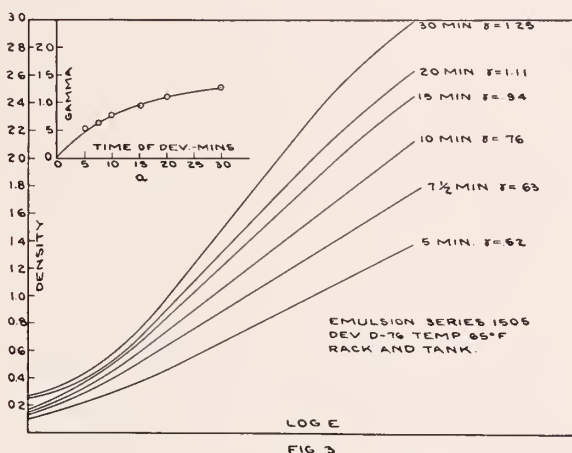


FIG. 3
Characteristic curves for Eastman duplicating negative, series 1505, developed in D-76 at 65° F. by rack and tank method.

VI. TONE REPRODUCTION

The photographic characteristics of emulsion series 1505 are shown in Figure 3 from which it is seen that at the low gamma required for duplicate negatives (0.5-0.6) it was possible to print to a minimum density of 0.3 and still retain all the negative densities on the straight line portion of the characteristic curve, which is the requirement for correct tone reproduction. For higher gammas it was necessary to increase the minimum density values.

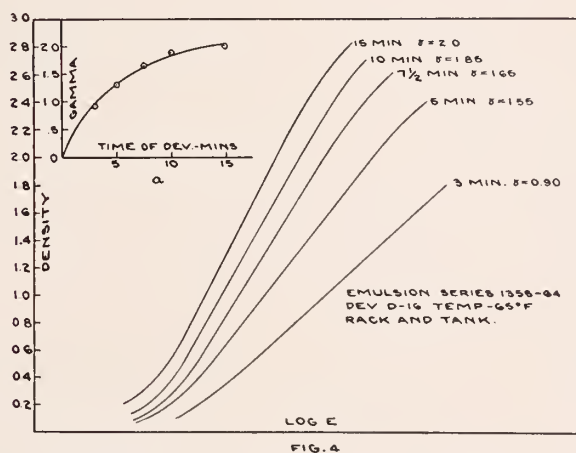


FIG. 4
Characteristic curves for Eastman duplicating positive, series 1355, developed in D-16 at 65° F. by rack and tank method.

Emulsion series 1355 (Eastman Duplicating Positive film) was found to be the most suitable material for use in the making of the master positive. Its latitude permitted the use of the high gamma (1.85) without impairment of the tone reproduction. Owing to the great density range to be covered in the master positive for best gamma conditions, no other

(Continued on Page 27)

Cinematographers and Directors Meet

Discuss Camera Trucking Problems

by **HAL HALL**

FOR many weeks there has been much discussion among Hollywood cameramen and others over the problem of "trucking" shots. Ever since Rouben Mamoulian's picture, "Applause" appeared with a multitude of shots in which the camera performed acrobatics, directors in Hollywood have been practically going wild in an attempt to inject moving camera shots in their pictures, with the result that many pictures seem to have been made with the camera constantly on the move; and many pictures have come out with photography considerably lowered because of these efforts. This has caused no little concern among the cameramen who conscientiously attempt to give the finest of photography in all productions.

In an attempt to correct some of the perambulating, or trucking, abuses, the American Society of Cinematographers called a meeting on the evening of July 19 at the projection theatre of the Paramount Studios. To this meeting were invited a large group of outstanding motion picture directors, and the meeting developed into one of the most interesting and perhaps beneficial of any held by this organization in many years.

Five reels taken from three productions made by major companies were shown, illustrating the trend among directors toward the trucking of the cameras. In these reels appeared some examples of camera trucking that were so absurd as to positively spoil the picture. In fact in one instance it seemed as though the director must have looked at an example camera trucking and then had started out to show Hollywood that he could have his camera run around the set, too. It is just such instances as this that the cameramen wish to correct for the good of photography and for the saving of money and time in production cost.

Following the showing of these reels, Mr. Mamoulian was called upon to give his views on camera movement. Mr. Mamoulian, who really started the camera movement vogue, very clearly gave his views and reasons for camera movement.

"I do not feel," said Mr. Mamoulian, "that I have been in the picture industry long enough to be qualified to discuss this subject before you men who have spent so many years in it. When I came into the picture field I spent considerable time in looking over the situation and a careful study revealed to me the fact that while this is the youngest of the arts, it, nevertheless, seems to have the most traditions. I have never seen an art in which there are so many things that you cannot do in any other way than has been done throughout its past. It seemed to me that there was little thinking in the industry, and that if a man advanced a new idea he was frowned upon and told that it could not be done because it had not been done before.

"I early came to the conclusion that the most important factor in the making of pictures was the camera. It seemed to me that the camera was being neglected; that it was being confined; that it was being ruled by the law of the tripod, which kept it stationary, and that it was being used only as something to dispassionately record just what was before it. I thought that the camera should be given the opportunity to really be a live and breathing factor in the making of pictures. That it should be allowed to get off the tripod and do the things that it was capable of doing. And so I used the trucking shots.

"Without doubt, trucking shots have been abused and overdone. And, unless intelligent thought is given to trucking shots

they are useless and unnecessary. I think that the camera should move—but only when necessary; only when by movement it will enhance the value of the picture. There are times when a trucking shot will make of a drab scene a vitally powerful one. Then the camera should move. Moving shots just for the sake of moving shots and with no reason are silly. But I believe that by taking the camera from the tripod we can, in many instances, add power and punch to the scene. In cases such as that a director should have the camera move by all means."

He then pointed out that while the direct cut from one scene to another might cost less, that a trucking shot would serve better to hold the story together and in many cases maintain the atmosphere that the director wishes to keep unbroken. But—he urged that no moving shots be made without the most intelligent of thought beforehand, and that none be made that would not prove more valuable to the scene than the direct cut shots.

John F. Seitz, Past President of the American Society of Cinematographers, then spoke briefly. He reviewed the history of cinematographic technique and pointed out that with the arrival in this country of "The Last Laugh" and "Variety"—in the silent picture days—the fad of acrobatic cameras came into vogue for a time with the apparent idea of trying to see who could make the most fantastic appearing pictures. This, he pointed out, was dropped with the coming of sound and the old technique returned until the present fad of trucking made its appearance. He pointed out the dangers of falling into the habit of making moving shots without reason to the point where pictures would be ruined, both photographically and otherwise.

Victor Milner, A.S.C., then spoke quite spiritedly on the subject. He declared that from the examples that are appearing in our theatres today it would seem as though many directors were having the cameras run around the sets solely to show that they, too, can have moving shots in their pictures, and with no other reason apparent. He then pointed out the difficulties placed before the cameramen in the matter of lighting for these shots; and explained that many times a cameraman appears on the set at the start of the day and arranges the lights for the scene called for, only to have the director walk in later and call for a trucking shot that makes it necessary to relight the entire set—thus causing delay and increased cost of production. He pointed out that photography must suffer when one has to light the set so that it can be photographed from practically all angles and in every nook and corner without a change of light placement.

Mr. Milner then declared that so much movement—in many cases—done so much that it is obvious to anyone looking at the picture that the camera is moving, will hurt the picture and will be reflected eventually at the box office. He declared that many of the moving shots are so trying on the eyes that theatre patrons complain of eyestrain because of them.

Paul Allen, A.S.C., then declared that he knew of one case in a studio where the director decided upon a trucking shot, and said that it took three days of rehearsal before this scene could be shot. He called attention to the increased cost this must have added to the production.

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New 16 mm. Camera from Eastman

Gives a Picture 8 mm. Wide

A MOTION picture camera that quadruples the number of images recorded on a given length of 16-mm. film, and thereby makes every foot of film go four times as far, has just been announced by the Eastman Kodak Company.

Small enough to fit in a coat pocket, the newly designed Ciné-Kodak Eight holds 25 feet of 16-mm. film but takes enough pictures on that length to run four minutes on the screen—equal to the projection of 100 feet exposed in other cameras using 16-mm. film. The Ciné-Kodak Eight will save makers who use it nearly two-thirds of film cost.

The new development in home movies is consistent with an Eastman policy effective since the early eighties—reduction of the expense of amateur photography to make it available to an increasingly large group without sacrificing the interests of "advanced amateurs" who desire to continue using the more elaborate equipment.

The Ciné-Kodak Eight, equipped with a Kodak Anastigmat F. 3.5 lens, is the lightest, smallest home movie camera with a film capacity permitting four minutes of projection. The low cost of both the apparatus and the film, together with the novel compactness and simplicity of the equipment at no sacrifice of convenience, should be of interest to that large group of persons who wish to make movies but who feel they cannot afford the special features of 16-mm. equipment.

The quality of the resulting motion pictures is pronounced very high by persons who have seen them projected in Rochester. More than two years of direct experimentation will have preceded the appearance of the Ciné-Kodak Eight on the market.

An entirely new method of distributing on the film the sixteen photographic images taken per second is embodied in the Ciné Kodak Eight. The new camera loads with a 25-foot roll of special 16-mm. film, but it exposes only half the width of the film at a time, recording a series of complete images on each half. When the 25 feet have run through once, the spool containing the film is removed and placed on the supply spindle. The other half of the film is then exposed. The width of each image being thus reduced by half, the height is similarly reduced and the number of images down the length of the film is doubled in consequence. Each exposed half of the 25-foot roll contains, therefore, as many pictures as a 50-foot roll exposed in other cameras using 16-mm. film, and the whole 25-foot roll contains as many pictures as 100 feet from the larger home movie cameras.

When the exposed film reaches a processing station, it is processed, slit down the middle, spliced end-to-end, and then returned to the movie maker as a 50-foot reel of 8 mm. film with perforations down one side. Perforations on the special film for the Ciné-Kodak Eight are spaced half as far apart as on other 16 mm. film.

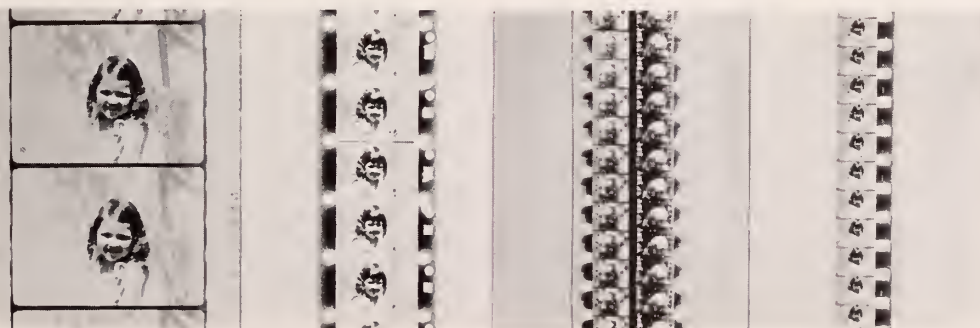


The new Eastman movie camera.

The special 25-foot rolls of 16 mm. film prepared for the Ciné-Kodak Eight are said to have an extremely fine-grained panchromatic emulsion that assures a clear, sparkling screen image in spite of great magnification. A black coating on the back of the film reduces the possibility of halation. The film rolls are small enough so that several may be carried conveniently in a pocket. As in the case of other 16 mm. film, the price of rolls for the Ciné-Kodak Eight will include processing—and also the additional work of slitting and splicing the 16 mm. width into 8 mm.

Two Kodascope Eights have been designed for the projection of the new 8 mm. movies. They will be put on the market

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At left, image on 35 mm. film. Next, on 16 mm. Next, the 16 mm. film after passing through new camera with 2 rows of images. Right, the film after being split into 8 mm. width.

The Coming Eclipse

And Some Timely Advice on Photographing It

by **CHARLES G. CLARKE, A.S.C.**

THE eyes of the scientific world are now being riveted upon Eastern Canada, Vermont, New Hampshire and Maine because of the total eclipse of the sun which will be visible in that region on August 31, 1932. Many parties from observatories will be making records along the path of totality, and scores of professional and amateur photographers will be getting cameras ready for the eventful day.

We often witness an isolated cloud casting a distinct shadow on the surface of the earth while the sun is directly illuminating the landscape around the spot. If the cloud is in motion, the shadow will move. This is, in reality, a miniature eclipse of the sun. In the real eclipse such as we will see the last of this month the moon takes the place of the cloud and totally obscures the sun.

Of all celestial phenomena, none have in the past made so deep an impression upon the minds of men as has the total eclipse of the sun. Often it has been looked upon as something supernatural, a direct manifestation of Divine wrath. Mathematical science may have banished this superstition, but the spectacle is still one to impress the beholder. The earliest record of an eclipse is reported in an ancient Chinese classic, "Shu Ching," as taking place on October 22, 2137 B. C.! Another was visible in southern Babylonia on July 31, 1063 B. C.

The successful prediction of an eclipse is really a triumph for the mind of man, and one of the test questions put to nature, on the reply which depends largely in the certitude of truth and conviction of reality. I do not know of any department of science where man has made more glorious conquests. For example, it is known now that there will be a total eclipse of the sun visible over Paris on June 4, 2160, long after you and I have passed on. So accurate is mathematical astronomy in predicting eclipses that the eclipse which will be visible at Los Angeles on August 12, 2045 is so well understood that we could set our cameras and instruments now with absolute pre-

cision. Future eclipses now predicted include one on February 14th, 1934, visible in Borneo; June 19, 1937, visible in Peru.

There are three types of eclipses: total, annular and partial. Due to the fact that the orbits of the earth and moon are both ellipses and not circles, the distance between the sun, earth and moon will vary considerably and the length of the moon shadows will change proportionately. Thus, when the sun is close and the moon far from the earth an annular eclipse is produced. When the reverse we have a total eclipse. In an annular eclipse a ring, or annulus, of light appears around the edge of the moon; such an eclipse is shown in Figure 2. The sun is seen gleaming through the valleys of the mountains of the moon, producing these spots of light which are called Bailey's Beads.

At the time due for the eclipse there will be found upon looking at the sun through smoked glasses, or black photographic film, a small nick in the north-west side. This is produced by the moon as its east side starts between the earth and sun, the moon starting to hide the disk of the sun. After an hour has passed the sun will appear as a crescent with the horns of the crescent towards the north-west. An interesting effect may be noticed at this time. If the observer is standing near a tree where the sun-light filters through the foliage, it will be seen that every little spot of sun-light on the ground is in the form of a small crescent. The small openings between the leaves are as pin-hole cameras and produce optical images on the ground of the eclipsing moon and sun. About ten minutes before totality the darkness begins to be quite pronounced. The disappearing light becomes changed in quality; it has a pale, ashen hue and differs from sun-light of normal conditions. The landscape, mountains and ocean have a peculiar, unearthly pale appearance that cannot be discerned at any other time. Meanwhile, the surrounding country becomes darker and darker. Sometimes as early as five minutes before the time of totality



Fig. 1. Total eclipse, showing Corona.

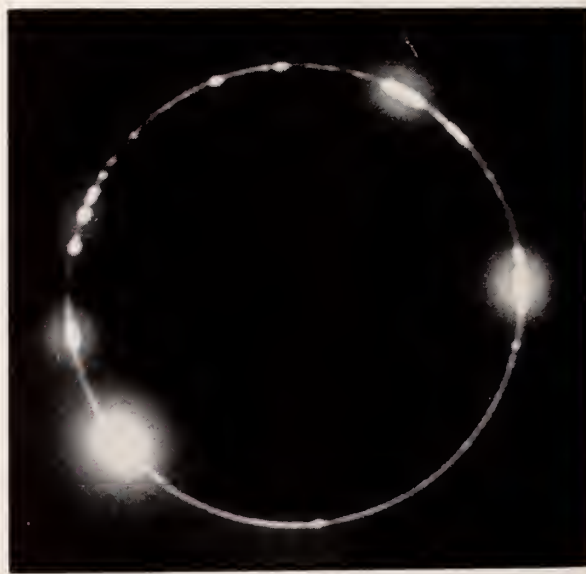


Fig. 2. Annular eclipse, showing Bailey's Beads.

the mysterious "shadow bands" may be observed. These wavy bands of light upon the surface of the landscape are not beheld at every eclipse, but likely will be seen and should be watched for in the coming eclipse. During the 1930 eclipse I undertook to photograph this peculiar phenomena. An account of this may be found in the June, 1930 issue of the AMERICAN CINEMATOGRAPHER. These bands are about a foot apart and are approximately three inches wide. They travel over the landscape about as fast as a man can run. An excellent way to observe them is to spread a sheet on the ground and watch them on it.

A minute before the totality the sky is often deep purple, and there is a fast fading of light. It is as if some unseen power were turning off the light of the world with great suddenness. When the last tract of the sun has disappeared and the moon's shadow has engulfed the spectator, the second contact, or total eclipse phase, has arrived. The smoked glass can be dispensed with at this time. There is often a drop of temperature, sometimes accompanied by a fall of dew; strange breezes spring up; flowers close, birds go to rest, animals in the fields grow restless and often dogs start howling.

Looking at the eclipsed sun, the air seems to quiver, first

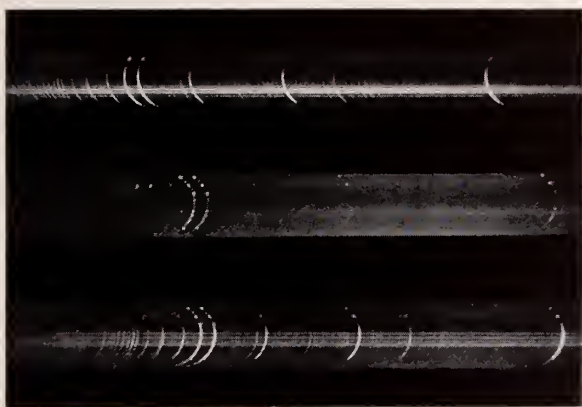


Fig. 3. Spectrum of flash at 2nd and 3rd contacts and spectrum of Corona.

and second magnitude stars make their appearance. During the coming eclipse Jupiter will be seen near the sun; Mercury will be a bit further away and between them will be Leonis. Surrounding the dark globe of the moon will be seen the streamers of the sun's corona; a mysterious, pearly light which is little understood. The corona is seen only during a total eclipse. Some of these streamers are 2,000,000 miles in length. Figure 1 shows a beautiful example of the corona during the total eclipse of June 8, 1918. Figure 4 is a photograph of a sunspot ejecting incandescent matter. As sun spots are prevalent along the equator of the sun and as the corona is more extensive in the equatorial plane of the sun there is reason to believe that they have a bearing upon each other. Against the dark edge of the moon deep, red spots of light resembling flames can be seen with a good field glass. These are "prominences"; gigantic eruptions of hydrogen, calcium and helium gases. Practically every element found on the earth has been found in the sun and other hot stars before it was known on the earth. How this was done and how so many other facts are known about the sun is largely due to a remarkable instrument—the spectroscope. This is an instrument for analysing light whose revelations are very important. Light is broken up into its component colors by passing it through a form of prism. Thus light from any substance that has been made incandescent can be separated and observed. It was by this method that helium was first discovered on the sun, long before it was discovered on the earth. Whether it is a glowing substance in the laboratory or on a remote star—it is all the

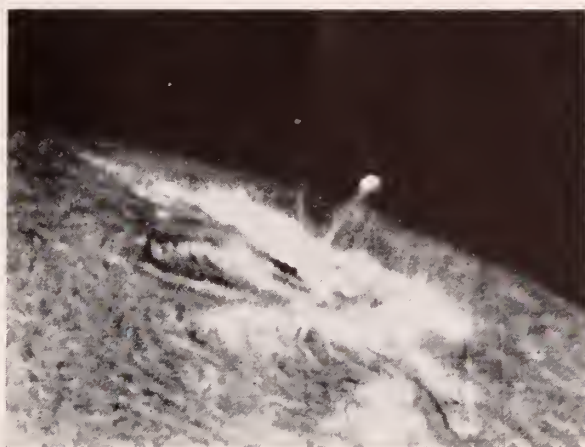


Fig. 4. Sunspot hurling incandescent matter outward.

same to the spectroscopic camera. Figure 3 is the picture of the spectrum made during an eclipse and shows the components of the prominences appearing as images of the sun as made through the spectroscopic camera.

The spectroscopic camera is not trained on the sun, it being too bulky and delicate to accurately follow the sun's movements. So it is trained on a heliostat, or coelostat, which are instruments consisting of mirrors mounted on an axis and driven by clockwork, by which a sunbeam is made stationary, being steadily reflected to one spot. These instruments are also used for the regular photographic cameras where long focus lenses are used. Photography plays a most important part in present day astronomy. Scarcely any visual study is done. Instead, photographs are made and the prints studied. Also by different exposure lengths much detail is shown that helps determine the distance and other facts concerning the stars and eclipses.

For "still" pictures, the best results photographically will be secured by using slow, fine grained plates—and they should be specially "backed" to prevent halation. In making motion pictures perhaps the following notes may be of help. First,

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Fig. 5. Spectroscopic camera in foreground. Heliostat at left center.

Camera Movement

by **DR. L. M. DIETERICH, A.S.C.**

Consulting Engineer

CAMERA movement can be divided into several classes of application now in practice:

1.—Angular movement with fixed tripod position, so-called "Panning" and "dipping."

2.—Movement of tripod, subdivided into (a).—Two dimensional movement by rolling platform or vehicle (perambulator, automobile, boat, etc.), resulting in so-called perambulator, truck or follow-focus shots, with or without panning or tilting or focus change by camera manipulation. (b).—Three-dimensional movement by crane, airplane, etc., with or without movement of camera relative to its support.

Any one of these various camera movements, of which panning and tilting is an old established practice, is always for the purpose of either following with the lens axis a moving object or person, of a more or less rapid change of picture field in a scene, of producing a special photographic effect (as a detail sometimes in trick photography), or as a means of enhancing dramatic value of a scene or action.

This short analysis shows camera movement to offer a great variety of possible applications and results, and to be a valuable tool for the director, cameraman and even the story constructor—if used intelligently. It is, however, with the exception of the panning and tilting, a comparatively new tool, and at present is often unwisely used without foreseeing and realizing the physio-psychological effect of its results upon the spectator.

Whatever the temptation may be to produce a novelty or unusual effect, which in itself is always a valuable screen asset, one fundamental condition must always be kept in mind, which is best expressed by a query.

Is the screen effect of any camera movement pleasant to the sight of the spectator?

It is, if the underlying principle for the production of motion pictures, i.e., the closest possible imitation of natural sight, is not grossly violated.

One of the most pernicious violations of this principle is the blurring of the picture. One kind of blurring, resulting from out of focus conditions, is, unfortunately, often unavoidably caused by the characteristics of modern lens construction; and it is a constant problem for the cameraman to keep within its permissible limitations. A similar ever-existing problem for the cameraman is the avoidance of cross motion blurring with a fixed camera position.

The fact that every good cameraman tries to avoid such blurring effects is the result of his knowledge that the spectator is not pleased with such effects, and that they reduce the screen value of a picture. These facts should be well kept in mind when camera movement is contemplated. The director, especially, who is the decisive factor in its use, must not forget when he visualizes the effect of such camera movement that he sees the set or scene as a whole with the whole expansion of natural vision; that he does not produce a blurring effect on the retina of his eye when it roams from one point to another, and that his sight is not boarded by a small picture frame.

Even when trying to check the effect of camera movement by looking through the finder during such movement, the finder does not show him the ultimate effect, because the blurring effect of the colored picture is not the same on the small ground glass as the black and white picture produces on the large screen. What may be acceptable on the ground

glass is often disagreeably disturbing on the screen. In so many technical problems a wholly satisfactory result cannot be obtained where interfering conditions prevail, and a compromise must be struck. It is the same with camera movements.

The dramatic effect of transporting the spectator by photographic illusion more or less rapidly from one position to another, either in the location or in the time scale, may be of the greatest value and produce upon the spectator a profound impression if—it is not destroyed by the unnatural and jarring effect of rapid focus change and cross motion, with the unavoidable and so unpleasant picture blurring.

The director can certainly increase tempo and action by well calculated camera movement, but must not lose sight of the increased burden he puts upon the shoulders of the cameraman who is mostly responsible for composition and mood which become so much more difficult of control with a travelling camera and fixed lighting. The cameraman knows and the director ought to know the limitations of the tools at the command of the cameraman, and the director should not demand from the cameraman results which it is impossible for him to give. It is better for him to curb his artistic desires than have them destroyed by actual screen results. Especially in camera movement application, the ever-existing necessity of close and whole-hearted cooperation of director and cameraman is of prime importance.

Whatever the effective use of camera movement may be, the cameraman must not fail to execute such movement in a uniform and unidirectional speed and under conditions, permissible for dramatic desires, so control such speed that persistence of vision produces the effect of motion without excessive image blurring, or he should use such ultra-speed of camera movement as to create streak blurring by which picture details are entirely destroyed. Such rapid movement does not produce disagreeable blurring, but on the contrary, produces the effect of rapid transportation from one scene to another in a more dramatic manner than standard cutting, especially when mechanical (not chemical) lap-dissolves are employed for the few frames necessary for such movement effect.

It may be mentioned here that there is a competition of practical value for camera movement in the use of the so-called "zoom" lens, which produces the same effect with stationary tripod as a platform moving in the direction of the lens axis. The advantage of the "zoom" lens lies in the fact that it permits a quicker and smoother change of focal distance. Its development so far restricts it to small working apertures which, however, renders a greater depth of focus, producing zoom effects superior to fast lens camera movement effects. It must be realized that it covers only distance changes covered by a change of focal value of about one to three, as possible with zoom lenses so far offered in the open market.

The cameraman must also realize that an increase of focal distance decreases the momentary depth of focus or that a greater depth of the field is covered by such lens without out-of-focus disturbance when the lens performance is in short focus position than when it approaches and assumes long focus position and efficiency.

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Exposure-Meters in Professional Cinematography

by **WILLIAM STULL, A.S.C.**

EXPOSURE-METERS, in one form or another, have for years been accepted as vital adjuncts to many phases of photography, both professional and amateur. They are frequently used, for instance, by photo-engravers and makers of color-separation negatives, while their use by experienced amateurs is too well-known to need elaboration. In so far as professional cinematography is concerned, however, such devices have seldom been used. This is regrettable, for in all photography there are few workers who face such unusual and exacting problems as do cinematographers. In cinematography, the need for absolute uniformity is far greater than in any other field, while the means of control after the exposure are far less than in any other process. Everything must be in the original negative: very little control is possible in either the development of the negative or the printing of the positive. Furthermore, a motion picture is composed of several hundred scenes, each of which is not merely an individual unit, but necessarily a part of a homogeneous whole. Scenes shot one day may be intercut with others made days or weeks earlier or later—and they must match each other perfectly in tone and contrast. Some means of mechanically measuring the intensity of the light reflected by the subject would, in many instances, prove of considerable value in obtaining this uniformity.

The recent introduction of several new exposure-meters based upon variations of the photoelectric cell, however, has given the entire question a renewed interest. Several of these devices have been put into use by various studios and individuals. In view of this, the writer recently undertook a somewhat detailed survey of the practical utility of these devices, checking the reading given by the meter on a number of different sets in several studios with the exposure actually being used. As the accompanying table shows, the meter proved its accuracy completely, but naturally failed to make allowance for the modified exposure used in making special night-effect scenes. Notwithstanding this, however, the accuracy of the device proved to be very close to 100 per cent: the average reading of the meter being f:2.48 while the average exposure actually being used on the same sets was f:2.56.

In making this survey, the writer naturally sought the opinions of a number of representative cinematographers; as was to be expected, these opinions varied considerably. In the main, these men admitted the theoretical utility of such an accessory, but doubted its practical utility for normal production conditions. Perhaps the best summary of the matter was voiced by Jackson Rose, A.S.C., who said, "Personally, I've never used such a device—principally because no exposure-meter as simple and accurate as these new photoelectric meters previously existed. More than once, though, I've wished for something of the sort. Under normal working conditions on the studio stages, where the cinematographer has complete control of his light, and is working with absolutely known factors, such an aid is unnecessary; but let him work under unfamiliar conditions—such as a distant location, where altitude and atmospheric conditions are unfamiliar or under familiar conditions with some unfamiliar factor—such as special filters or a new type of film—and the meter can easily be worth its weight in gold. An excellent example is furnished by one of my closest friends: he is a technician of long years of ex-

perience, and recognized as one of the two greatest experts on filters and filtering in the industry. Whenever I find myself at a loss on the use of filters, I seek his advice; frequently we go out together and make practical tests to solve the problem. In preparing for a recent production we did so, as I wanted certain special filter-effects with which I was not familiar. When we made the tests, I computed the exposure mentally, basing my conclusions on my past experience with Super-Sensitive film and other filters, and using the published filter-factor of the special filter we were using. He, on the other hand, consulted an exposure-meter, and then did a little figuring on paper. The results showed that his figure was the most accurate, and he had taken only a few seconds longer to reach it than had I mine. I was, naturally, surprised to see him using a meter (it was an antiquated "Watkins" meter for still cameras); he confided to me that he regarded the use of that old meter as the secret of his success in using filters of all kinds, under all conditions.

"Now, with these more modern photoelectric meters, the obtaining of such a reading would have been vastly quicker and simpler, for all that would have been necessary would have been to slip the filter over the meter, and read the exposure directly off the dial.

"Naturally, such meters would prove invaluable for any cinematographer working under unfamiliar conditions. The only stumbling-block that I can see is the personal pride of the cinematographer. Most first cinematographers are men who have spent a vast deal of time and money in learning their business—reducing it to a matter of instinct: naturally, they hesitate to admit that they need any aid at all under any conditions—no matter how unusual. I don't blame them; but I personally feel that if any such device is going to increase my efficiency, I'm certainly going to take advantage of it. And after all, no mechanical device can possibly be made to do the real work of the cinematographer—picking artistic compositions and arranging artistic lightings."

Charles Glouner, the head of the Camera Department of the Universal Studio said much the same, adding: "To my mind, the greatest value of such meters will be not in the studio, but on location. For when a company goes on location—particularly when the location is distant from the studio—there is always a chance of being more or less deceived by unfamiliar light-values. And when a unit is several days' journey away from the studio, the cinematographer can't afford to make mistakes; too, he hasn't the opportunity to see his rushes each night as a check on what he's getting. Therefore such a meter would be invaluable in starting a company off on its first few days' work on location. The great thing, of course, is to be willing to accept the aid of such a meter—to realize that it will not lessen the respect in which the cinematographer is held. After all, no one condemns a laboratory man for determining the printing-light of a negative photometrically rather than by inspection of the negative, or an engineer for using a slide-rule rather than figuring each item out on paper. Similarly, in these days when efficiency means so much, the cinematographer who knows how to take advantage of every scientific aid available and blend it with his own artistic ability is far and away the best man for the job."

Oliver Marsh, A. S. C. pointed out that "An exposure-meter such as this one can—properly used—be a great help; but the user must realize that it gives only an overall reading: it doesn't help him if he has fallen down on the balancing of his light. It will tell me, for instance, if I've got enough light on the set to make an exposure possible—but it won't tell me if I have too strong a backlight, or if I have too weak a front-light in the shadows. Of course, it is quite possible to take a reading for each component separately: but that takes time—and a cinematographer's experience can—or should—tell him that in an instant. On such special occasions as my last picture, "Rain," which was made, both exteriors and interiors, on location, such a meter would have proven invaluable for matching the natural light of the exteriors seen through the windows of the sets upon which I was making the interior scenes by artificial light. I tried to get such a meter then, but none was available at the moment—and all those in the studios were in actual use. It would have helped me a great deal had I been able to have one, so that by first taking a reading of the light-values of the exterior portion of the scene, and then closing the windows and taking a reading of the value of the artificial lighting inside, I could have matched things perfectly. As it was, I had to draw upon my experience: it happened that I hit it perfectly—but I might just as easily have missed it a trifle. An accurate meter would have made assurance doubly sure, and could have easily saved the company a great deal of money for retakes, which would have been imperative had my unaided judgment been at fault."

To Arthur Miller, A.S.C., the greatest possibilities of these meters lie in matching the foreground and background values in photographing projected-background process scenes. Said he, "The most deceptive factor that I have yet encountered is the disparity between the visual and photographic values in process scenes. If such a meter will give an accurate measure, first of the photographic value of the projected background transparency, and then of the lighting on the actual foreground action, it will simplify the making of these important scenes immensely."

Farciot Edouart, the head of the Transparency Process Department of the Paramount Studio corroborated this. "In either projection-transparency or complementary-color-transparency work such a meter can easily be invaluable," he said. "In the latter process particularly, the red light used to illuminate the foreground action is highly deceptive, for the average cinematographer has had no reason to train his eye to judge the photographic value of colored light. Even the trained transparency technician would find such a meter valuable—provided it would read accurately for this red light."

"Several years ago, in fact, I built a special photometer to use in this work. But it was of the ordinary type, which depends upon the visual matching of the light reflected by the subject with a known light. Therein lay its weakness—and the strength of these modern photoelectric meters. For the human eye is most unreliable: it has too great powers of accommodation, and reacts differently according to the amount of fatigue. I have made as many as six separate readings with the conventional comparison-type of photometer on a single set—and gotten almost as many different exposure-values. I

have made one reading on a set just before going to lunch, after a morning's work, and then another after lunch—without moving a single light—and found the two widely divergent. It was the fault, not of the meter, but of my eye. The photoelectric cell meter, however, is, if accurately made, a real precision instrument, and completely eliminates the human element. In the making of process shots it can be extremely useful, for in certain shots of this nature I have made parts of the shot at intervals separated by many weeks—and had to match the lighting of the two to an extremely precise degree. Now, in so far as I am personally concerned, that is not too difficult, for I have trained my eye and memory through many years of specialization in process work to the point where I can absolutely guarantee to match the lighting in process scenes made months or even years apart: nevertheless, any such instrument as this, which tends to minimize the possible error of the human element is a distinct aid to efficiency, and a personal aid to the individual."

At the same studio, Charles Lang, A. S. C., introduced two other important considerations: "To be truly accurate," he remarked, "the readings of such a meter should be made not merely from the approximate viewpoint of the camera, but through the actual lens used in making the shot. Otherwise, you have no means of checking the angle covered by the meter, nor any proof that the meter is not being directly hit by some individual unit in the back-lighting equipment, which, though properly screened from the lens of the camera, may not be so screened from the eye of the meter. Such a meter, too, would be invaluable in instances where the voltage on a set was not constant—as when the set was on the end of a circuit feeding several other stages, and accordingly subject to fluctuations when the companies on the other sets were or were not working. The changes in the color-temperature of incandescent light caused by lowered voltage are not always easily detectable by the naked eye, but can wreak great havoc in the results achieved on the film."

President John Arnold of the A.S.C., head of the Metro-Goldwyn-Mayer Camera Department summed the matter up excellently when he said, "The accuracy and utility of such devices are unquestionable; the point that must be always remembered, however, is that they must only supplement the human element. Even the best meter can only give an overall reading: it cannot determine the artistic balance of the lighting. It can aid the experienced cinematographer, but it cannot take the place of his experience. It will not enable John Doe to take charge of a set and photograph Norma Shearer as artistically as does William Daniels, A.S.C., or any trained camera-artist. It will enable John Doe to know that he can make a technically satisfactory exposure—but it cannot give him the artistically balanced light that makes the difference between good photography and bad. On the other hand, it can and will ensure that a trained cinematographer may have an unerring, mechanical staff to lean upon when confronted with unfamiliar conditions. As such, even though the man may be able to meet these conditions satisfactorily, the meter would serve both as a check and as an inspirer of confidence."

COMPARATIVE TEST OF PHOTOELECTRIC EXPOSURE METER

STUDIO	SET	CAMERAMAN	METER READING	ACTUAL EXPOSURE	NATURE OF SCENE
Universal	1.	Arthur Miller	f:2.8	f:2.7	Normal
Universal	2.	Geo. Robinson	f:2.5	f:2.7	Vaudeville Act
M-G-M	1.	Oliver Marsh	f:2.	f:2.8	Night Exterior
M-G-M	2.	Oliver Marsh	f:2.	f:2.8	Night Exterior—Fog
M-G-M	3.	Hal Wenstrom	f:2.7	f:2.7	High-key Interior
Paramount	1.	Harry Fischbeck	f:2.3	f:2.3	High-key Interior
Paramount	2.	George Folsey	f:2.7	f:2.8	High-key Interior
Paramount	3.	Ernest Haller	f:2.4	f:2.3	Low-key Interior
Paramount	4.	Farciot Edouart, David Abel	f:2.4	f:2.3	Night Interior, for process shot
Paramount	5.	Farciot Edouart, David Abel	f:2.8	f:2.3	Same. Reading made on opposite side of camera booth from No. 4

NOTE: Lighting in all cases by Incandescent light.

Motion Picture Film

In the Making

This is the second and concluding installment of this unusually interesting story of the making of motion picture film, prepared by the Eastman Kodak Company.—The Editor.

THE poor benighted 'indu' of whom it is reported in the familiar Limerick that "for clothes 'e makes 'is skin do" doesn't prove a very good customer for the Messrs. Hart, Schaffner & Marx. Yet his wife wears silver jewelry. If nothing else, Brother Indian is silver-conscious.

The cinema world has better reason than the East Indian to be silver-conscious. No change of policy nor any legislative decision can devalorize silver as the one material without which there would be no motion picture industry and the absence of which would make it useless to employ thousands of persons and an enormously impressive array of machines in the manufacture of film.

The typical film manufacturing plant, with the workings of which the AMERICAN CINEMATOGRAPHER acquainted readers in July, receives daily a shipment of silver that is large in comparison with the requirements of any other industry or even of the Mint. More than four tons a week, in the form of ingots, pass through the storage safe.

The thought of using such a large quantity of silver for manufacturing is spectacular. The actual operations of turning silver into silver nitrate for use in photographic emulsions are less spectacular, but they should be interesting to any projectionist with a desire to know something of how film is made. In silver nitrate manufacture a glimpse is obtainable of the extreme methods necessarily utilized in the photographic industry to make the delicate product meet specifications every time, everywhere.

Into every bar of silver bullion received in this photographic plant a hole is drilled, a record number is punched. Chips from the drillings are promptly tested by the department handling the silver, in addition to an entirely independent test by a laboratory charged with responsibility for the quality of all raw materials. Impurities are rarely found in the silver, for the supply is bought with extreme purity as its object.

Even though impurities are seldom present, the inspection continues year after year. If a trace of copper or iron were permitted, unchecked, to go into the manufacturing stream,

endangering photographic effectiveness, later tests would discover and eliminate the result, but time and other materials would have been wasted in the meanwhile. Production schedules would have been interrupted. Not only silver, therefore, but every ingredient, as well as every finished product and as well as products in the process of manufacture, is tested by the typical film manufactory that we are observing. Of the thousands of employees at the plant, hundreds devote their whole time to the careful inspection of materials at every stage of evolution into finished photographic products.

Observing the first step in converting bar silver into photo-sensitive materials, we shall instinctively feel that we are witnessing wanton destruction. With our realization of the traditional worth of silver, it is difficult to avoid a shock at seeing the bars of metal dissolved in nitric acid until all is fluid and nothing solid remains.

The nitric acid, it is worthy of parenthetical note, is made right in the plant under scientific conditions leading to purity of grade. Nothing can be left to chance in the manufacture of film.

The silver nitrate solution we have then seen made is siphoned from its porcelain bowls into troughs, whence it runs through glass tubing to an evaporating room on the floor below. There, men wearing rubber aprons and rubber gloves guide the flow into other bowls, which are set on heated tables. The heat drives off water from the solution; and, when the concentrated solution cools, the silver nitrate crystallizes. Silver nitrate in this form would be more than suitable for most uses—but photographic manufacture is an exacting master.

Consequently, the crystals are once again dissolved in distilled water and once more crystallized. This operation is repeated many times—until all impurities are removed. Final evaporation leaves snow-white crystals, appearing like soap flakes but more vitreous and brittle. Then come careful drying processes.

Silver nitrate is sensitive to light. It gradually loses its whiteness under the influence of the sun's rays. It was this basic chemical fact that made photography—and the motion

(Continued on Page 34)



Purifying silver nitrate by evaporation and recrystallizing.



Ducts for the conditioned air that dries the film.

HAL HALL

says

Credits

FOR some unknown reason, someone at Universal Studios suddenly decided recently to eliminate the names of the cameramen from the credit list on the credit title of all pictures produced by Universal Pictures.

When I heard this I could not believe it, for throughout the years "Uncle Carl" Laemmle has always seemed the very personification of fairness. Like all producers, he has made his mistakes; but—he has never made the mistake of being unfair, especially with the technical men. However, it was true. Credits for cameramen had been forbidden under the silly and absurd pretext of "saving money."

Imagine! Refusing to place upon the credit title the names of the men whose photographic art make possible the placing of the picture on the film. After all, what is a motion picture? It is not a collection of sets, actors, a story, director and a flock of supervisors. All these with all their work, no matter how good it might be, would never be seen if they and their work was not photographed and placed upon a little strip of celluloid by a man who has spent years in the development of the art of so doing.

Imagine! A bright executive lays out a budget calling for the expenditure of, say, \$275,000.00, for the making of a picture. The fate of more than a quarter of a million dollars is placed in the hands of one cameraman, who, if he fails, will ruin the picture. And then—they do not want to give him a single line of screen credit on a title sheet that is cluttered up with the Lord knows how many minor individuals who would not be missed if they dropped through a hole in the earth.

Surely, I thought, "Uncle Carl" must have suffered a brain-storm when he entered that hospital back in the east just before the order was issued. For, as I said before, "Uncle Carl," has always been so fair.

Well, I don't know just what happened, but screen credit has been returned to the cameramen at Universal. Perhaps "Uncle Carl" didn't know anything about what was happening. It would seem so, for now that he is again on his feet the cameramen are getting the credit that is due them. May such an absurd mistake never happen again! Although, there have been whisperings to the effect that other studios had planned to follow in the footsteps of Universal.

In the humble opinion of this writer, no man in the studio deserves more credit than the cameraman.

The Amateur Contest

ONLY three more months remain in which to make that picture and enter it in the \$1000.00 Amateur Movie Making Contest which this magazine is conducting. This will be almost the last warning, for time is flying rapidly, and all films must be in the mail or express by midnight of October 31, 1932, to be eligible for the prizes. Films are arriving from all over the world—a six-reeler from France arrived today. So if you have confidence in your picture making ability, better start right now and get busy. The prizes are big and the recognition should be worth even more than the prizes.

Suggestive Advertising

THIS writer almost missed seeing an excellent motion picture recently because of the type of advertising used to announce it to the public. From the words and artist's drawing in vivid colors, used in the announcement of the picture, this writer was certain that the picture must be a salacious mess, designed to tickle the fancy of sex-mad morons. So, he didn't go to see it when it played in one of the big houses of Hollywood. Then he heard that it was a clean and delightful comedy, so picked it up at a neighborhood house and found it one of the best pictures of the year.

If this writer would stay away from the theatre because of the advertising, there must have been countless others who felt the same way about it. Why, in Heaven's name, do the powers that handle the advertising of pictures think that they have to make the people believe that they are dirty and filthy? That may drag in a few people who like to wallow in the mire and filth, but it will turn the better type away. It is time that the Hays organization did something really effective in changing such practices. Other big industries turn out advertisements that bring results without having to resort to things of this sort. Surely, the brilliant minds in the picture business should be able to do likewise. The great American public is not filth-minded, so why do picture producers and exhibitors think that they should feed them that type of advertising? Some day this writer hopes to see a full page advertisement in the newspapers headed something like this—"If You Want to See the Cleanest and Sweetest and most Entertaining Picture in Years, Go to the etc., . . ." Why not, if the picture is that? I bet that the theatre would be packed.

Captain Henry Lomb

MOST of us who use cameras and projectors and microscopes little realize that one of the men who helped found one of the greatest institutions in the field of optical science, found his greatest delight in giving service to the city in which he at first struggled and later reached the heights of success. I speak of the late Captain Henry Lomb, who was one of the founders of the firm of Bausch and Lomb.

Recently, more than forty thousand residents of the city of Rochester, N. Y., gathered for the unveiling of a shaft of black Minnesota granite, a striking and lasting memorial to Captain Lomb, who is known to the people of Rochester not so much for his work in the optical field, as for his virtues of day by day solicitude for the well-being of his fellow citizens; for his patient striving to bring to his city a constantly enlarging horizon of public opportunity for health, education and self-improvement. As the mayor of Rochester said in his speech accepting the monument, "Rochester is a finer city and a better place to live because of Captain Henry Lomb."

Let us hope that more business men will follow his example.

Remember

A SMILE will get you further than a frown. A kind word will make the other fellow happier. A good deed will make you happier. Maybe if we all practice just that we might help bust the depression. We can't succeed if we admit we are defeated.

Concerning Cinematography

Critical Comments on Current Pictures
by **WILLIAM STULL, A. S. C.**

TOM BROWN OF CULVER

◆ This picture is certain to stand for a long time as a black mark against the good name of the Universal Pictures Corporation, and its revered head, Carl Laemmle, for it bears no mention of the cameraman on its credit-titles. This is doubly amazing coming from the beloved "Uncle Carl," who, through his long years in the motion picture business has built himself an enviable reputation as a man who deals honorably with his employees. No one is in a better position to realize how greatly the cinematographer contributes to the success of a production than is Carl Laemmle, in whose studio innumerable pictures have been saved from incompetent direction by the sheer ability of the cinematographers. For, a good cinematographer is not merely a man who contributes attractive photography to a picture, but one who, through long experience in the picture business, is able to protect the director from falling into the pitfalls lurking to ensnare the incompetent and careless. And Universal's cameramen are very good, for Universal has, in times past, employed at least as many incompetent directors as any other major studio.

"Brown of Culver" is an excellent illustration of the case in point. The story itself is good, as is the acting, and the direction of the individual scenes. But somewhere along the line—perhaps in the adaptation, the direction, or the editing—someone has slipped up, with the result that the completed picture is episodic, with undoubtedly the worst continuity seen in months. Wherever possible, the cinematographer has attempted to bridge the yawning gaps photographically; but he could not do everything all of the time.

Viewed strictly as photography, "Brown of Culver" is an excellent job, displaying good taste throughout, and avoiding all of the pitfalls lurking in the subject-matter. Made in Indiana in the springtime, with backgrounds that demanded filtering and with the players clad in costumes that could not be filtered heavily, the cinematographer had a difficult problem, which he solved perfectly. In his treatment of the many military ceremonies, he has avoided the obvious treatment without rushing to the opposite extreme of artiness. Therefore, I am doubly proud to give to Charles Stumar, A.S.C., the richly-deserved credit which Carl Laemmle denied him. Let us hope that Mr. Laemmle will see the picture again, meditate not alone on the excellent photography and the wretched continuity therein, but also upon the motives of the picture: Honor, Fair Play, and Loyalty and hereafter accord credit where credit is due, dealing once more as fairly and honorably with his cameraman as he has in the past.

THE FIRST YEAR

Though beautifully photographed, this production falls somewhat below Hal Mohr, A.S.C.'s, usual high standard. In addition, it indicates the degree of artistic specialization now attained by cinematographers. Hal Mohr's métier is not the simple Gaynor-Farrell type of story; his work has a sophisticated brittleness that is perfectly attuned to the stories used, for instance, by Joan and Constance Bennett, or Ann Harding, but lacking the softness and simplicity required for expressing Janet Gaynor's elusive charm. One would scarcely dream of assigning Cecil de Mille to the direction of such a story; nor should one assign Hal Mohr, the cinematographer of the sophisticates, to so unsophisticated a production.

REBECCA OF SUNNYBROOK FARM

◆ In this picture, Glenn MacWilliams, A.S.C., once more hits his artistic stride which has, of late, faltered a bit. His treatment of the earlier sequences of this production—especially the exteriors—is well-nigh flawless. In the later sequences, however, he has somehow failed to keep Director Al Santell from committing a serious artistic faux pas. Shortly after the middle of the picture—with no change of story-mood, the photographic treatment is brutally changed: from a treatment marked by idyllic simplicity, the picture suddenly changes to a treatment of sophisticated "artiness," and becomes an orgy of weird lightings and camera-angles. There can be no excuse for this; if the director did not know enough about his business to avoid this, the cameraman should have known—and kept the director straight. Another technical flaw is the fact that, in the early part of the picture, much important action occurs in running shots of the principals in moving automobiles, wagons and sleighs; these scenes were photographed normally, with indifferent results both in photography and recording, despite the fact that they could—and should—have been made by use of the transparency-projection process which would assure better results and greater simplicity in the making.

BIRD OF PARADISE

◆ This picture is not by any means art—but it is certainly box-office. The photography is credited jointly to Clyde de Vinna, A.S.C., Edward Cronjager and Lucien Andriot. It would be difficult to name three men whose work is more radically different. The result is unusual: intensely spotty, with here a scene obviously de Vinna, next to it one just as clearly Andriot, and both cut into an all-Cronjager sequence. Under such circumstances, there can be no attempts at a sustained photographic mood; but with three such artists working on a picture there can be no question of the individual quality of the photography. "Bird of Paradise" is one of the most striking pieces of photography recently released—as gaudy as a de Mille bath tub (which in every respect it resembles)—and as sure to tickle the public fancy, despite the cinematic bad-taste.

The real honors, however, belong to Lloyd Knechtel, Vernon Walker, A.S.C., and Don Jahraus, who have contributed noteworthy special effects, as sensational as the celebrated Red Sea crossing of the memorable "Ten Commandments." The picture is almost entirely printed on tinted-base stock, to its enormous advantage. A fine musical score also serves to heighten the superficially dramatic appeal of the film.

THE MIRACLE MAN

◆ This picture is another example of true cinematographic artistry. David Abel, A.S.C., has put a deal of feeling into the photography of every scene, and has succeeded in matching the mood of the story to perfection. Farcot Edouart has contributed some unusual transparency-projection process shots—notably of Sylvia Sidney and Lloyd Hughes in a sailboat. These shots demanded unusual coordination of background, foreground-action and lighting; and so perfect are they that they cannot be distinguished from straight shots—except by their perfection. Every scene in the picture, for that matter, is noteworthy, and should be studied by everyone interested in fine cinematography.



'The Call of the Range'

Charles J. Belden



"Country Bridge"

Augustus Wolfman



"The Fisherman"

H. M. Armstrong

The Negative-Breakdown System

by **DAVID RIDGEWAY**

Sound Department, R-K-O Studio

ONE important outgrowth of the present depression in the motion picture business is the added importance attached to detailed economies in all of the technical departments of a studio. One of the more recent of such economies effected in the R-K-O Studio is what is known as the "Negative Breakdown" system of conserving positive film used in recording. It is a well known fact that not only is a great deal more film exposed in the making of a picture than is actually used in the final picture, but a great deal more film is exposed during the various "takes" of a given scene than is finally printed up for the use of the cutters. Dramatically speaking, this is of course unavoidable; but at the same time, it represents a considerable waste of both the film itself and the time, labor and money involved in processing unsatisfactory takes.

With this in mind, the writer recently submitted to the Technical Board of the R-K-O Studio the suggestion that very considerable economies could be effected by segregating these unusable takes before the development of the sound-track rather than after, and accordingly developing only the takes that will be actually used. The technical Board, under the Chairmanship of Mr. Carl Dreher, studied the proposal, and, finding it feasible, developed it to the point where it is now in practical operation both in this and several other studios.

The negative breakdown system is essentially based upon the fact that studio sound-recording is done, not on high-speed negative emulsions, but on slower, positive, emulsions. Such emulsions do not require the extreme precautions regarding the absence of light before development that the more highly sensitized negative emulsions do. Accordingly, since it has always been the studio's custom to punch the scene and take numbers in sound-track negative immediately preceding each take, it is a simple matter to rewind the positive film under a yellow safe-light, and remove the individual takes which have been satisfactory. These takes are then joined together in the usual manner, and developed and printed quite normally. Since, on the average, only about one take in four is perfectly satisfactory, a saving of approximately 75 per cent in developing cost is at once effected.

But the saving does not end here. In the double-film system now used for all studio recording, the sound and picture are, as is well known, recorded on separate films. The sound-track negative, though made upon standard 35 mm. positive film, utilizes only a small part of the sensitized area of the film. There are various objections to the use of a smaller standard of film for the sound recording; but it is entirely practical to utilize the unused portion of the present sound-track negative. This we do in the R-K-O negative breakdown system. The unused takes of scenes are, as has been explained above, segregated from the usable ones. These usable takes are developed in the normal manner; the unused ones are held until the picture of which they are a part has reached the final cut, and there is no possibility that they will be needed. They are then spliced together, and the film—which is coated, of course, with a positive emulsion—is utilized for the printing of the sound-track daily prints. The film is reversed end for end, so as to bring the previously used portion to the side opposite that upon which the daily sound-track is to be printed.

This system has worked out with complete success in the R-K-O Studio, and is applicable particularly to studios which do not have their release-printing laboratories on the west

coast. In case the studio makes its own release-prints here on the coast, there are almost inevitably enough short ends of positive film left over from release-print runs to more than amply provide film for daily use.

In actual practice, naturally, there are a few details necessary to the operation of such a plan which make its operation slightly more complicated than would be suggested by this brief outline. For example, it is naturally advisable, too, to keep the reclaimed film segregated as to emulsions, so that emulsions of different manufacture, or of different numbers from the same manufacturer, are not spliced into a single roll for the printing of daily prints. These, and the various other minor technical details, however, have been satisfactorily routinized by the R-K-O Technical Board, with the result that considerable savings are being effected on current productions.

Such a system is, to a certain extent, also applicable to the handling of picture negative. It would be quite possible, at least, to segregate the good and bad takes of the picture negative much as the sound negative is now segregated, and to process only the takes that will be actually used. Several factors, however, prevent commercial application of this system for the present. In the first place, scene and take numbers are not punched on the picture film, but photographed. In the second place, even were they punched, the far greater speed of modern supersensitive negative film would make the segregation of the good takes a very difficult matter, and even under the best of conditions, would involve great danger of fogging the undeveloped film. Lastly, there would be no possibility of reclaiming the undeveloped film. Therefore, the R-K-O Technical Board, although in favor of the negative breakdown system as a proved economy measure in handling sound track, has not deemed it practical for application to picture negative on current productions.

RCA 16 mm. In London

WITH the Duke and Duchess of York among the thousands of visitors to the International Congress of Film Exhibitors at Grosvenor House, London, RCA Photophone, Ltd. conducted continuous demonstrations of the RCA Victor Company's new 16 mm. portable sound-on-film projector for five days. Several subjects were loaned by Walter Herman, British representative of the McKee-Heller Company in New York City. It is said the Duke of York is considering the purchase of one of the machines for installation in Princess Elizabeth's cottage.

A Cameraman . .

With many years experience in many foreign countries—for several years an expert on the staff of a big news-reel—also experienced in studio work—wants to connect with an expedition to any country. Knows foreign countries and customs—speaks three languages.

If you are interested, write

EXPEDITION CAMERAMAN

Box 31, American Cinematographer
1220 Guaranty Bldg., Hollywood, Calif.

WHY NOT ONE FILM FOR ALL SHOTS?

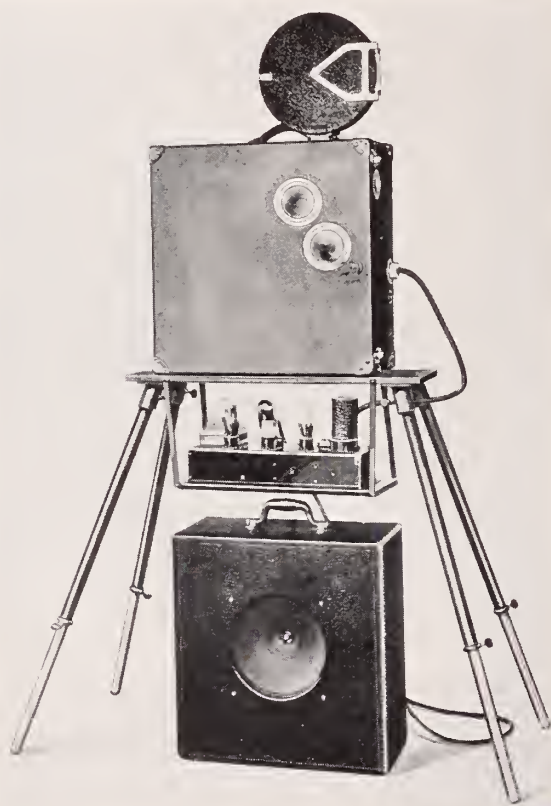
... That question concerns every producer and cameraman. The answer is easy: Use Eastman Super-sensitive Panchromatic Negative *with gray backing*... "Inkies"... arcs... daylight... any kind of light is right for this versatile film. Cameramen are rapidly finding that out, and everybody from actor to exhibitor is benefiting from the use of this remarkable all-purpose negative. Eastman Kodak Company, Rochester, N. Y. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN SUPER-SENSITIVE
PANCHROMATIC NEGATIVE (GRAY-BACKED)

.. In the Realm of Sound ..

New Synchrofilm Portable Sound Projector

THE Weber Machine Company of Rochester has just announced a new 35 mm. portable sound projector that should be of considerable interest to anyone desiring an equipment that is really portable and also dependable. It is called the Synchrofilm Projector, and has been designed for simplicity in set-up, operation and transportation.



The new Synchrofilm sound projector.

Some of the outstanding features of the new projector follow. The carrying case is of suitcase type and is made of cast aluminum. The projector, complete, weighs but 60 pounds, lightness being afforded because of the frame being made of aluminum. Mazda 500 watt light furnished with standard equipment. Projection lens 4-inch focal length; other sizes if desired. The motor is 1/20 h. p., 110 volt, 60 cycle, constant speed. A two point rear shutter is designed as a partial fan to ventilate gate and aperture plate. There is also a fan attached to the motor shaft to furnish air to cool projection lamp. It is also claimed that this machine has fewer parts than any projector yet developed. The amplifier is a push pull Pentode type and the speaker is dynamic cone type.

RCA for Advertising Agency

LORD & Thomas, prominent advertising agency which is said to place the largest volume of radio advertising on the air, has purchased special phonograph disc recording and reproducing apparatus from the Record & Recording Division of the RCA Victor Company.

It is understood that Lord & Thomas plans to make disc records of the Lucky Strike programs with the new apparatus, as an inexpensive means of preserving the programs exactly as they go out on the air. This permanent file of programs is expected to prove especially valuable to the advertising agency and the client because it permits of frequent rehearsals whenever it is desired to analyze a program or study the microphone technique of the artists appearing on the program.

The recording apparatus is simple, inexpensive and portable. It consists of a unit of two turn-tables, an amplifier and suitable volume control, a two-button studio microphone and a loudspeaker for playing back the records after they have been made. The records may be made by simply placing the microphone before the loudspeaker of an ordinary radio receiving set. Since the turn-tables revolve at a speed of $33\frac{1}{3}$ revolutions per minute, it is possible to place up to about 15 minutes of recording on one side of a 12 inch record. When the recording on one disc nears the end, the other turn-table automatically starts and takes up the thread of the recording without a break in the continuity. In the meantime, the first record is turned over to prepare it for further recording, if necessary. Thus, it is possible to record an hour program with the minimum of attention.

Pre-grooved records of a semi-flexible material are used for the recording, and the records may be played back immediately after they are made, and as many times thereafter as desired.



Iron Age Article Tells of Accuracy in Sound Printing

HOW the application of the sound track to motion picture film has necessitated extreme accuracy in the machines that produce theatre prints, is shown in a recent article in Iron Age written by C. A. Ziebarth, secretary and general superintendent of Bell & Howell Company.

"It requires no stretch of the imagination," says Mr. Ziebarth, "when considering the motion picture industry to understand that in the last analysis the movie theatre audience is the final judge. If it was exacting in demanding quality in silent films, it is even more critical in appraising sound films, the production of which has added many new complications.

"Sounds of low frequency give little trouble but when frequencies of 4000 to 5000 per second (the upper range of the piano) are encountered, the time element becomes so important that extreme machine accuracy is a necessity."

The Iron Age article, which is profusely illustrated, describes in particular how the Bell & Howell Company produced for its sound printer a sprocket with teeth hobbled to limits within 0.0002 inch.

the **WAR** Department of the
UNITED STATES GOVERNMENT
buys only the **BEST** equipment.

Therefore, when it wanted a portable recorder to make
a picture to show at the forthcoming World's Fair at
Chicago, it naturally purchased

"RICO"

"RICO" OFFERS THE FOLLOWING RECORDING SYSTEMS

"RICO" Senior

Studio Sound Recording Unit

price: \$8000.00

No finer channel on the market. Complete equipment:
"RICO" noiseless recording amplifier, portable extended
mixer, sound camera, 3 microphones, microphone boom,
motors and blimps for two cameras, power supply generator
set, 12 recording lights, two magazines, output test set,
600 feet of cables, three years' supply of accessories, por-
table sound projector, tuned motor control.

"RICO" Single System

price: \$3365.00

Renewed and silenced Bell & Howell cameras, complete
with all accessories, and with "RICO" optical unit for single
system recording. New "RICO" JUNIOR Amplifier, Silencing
Blimp, Camera Motor, Two Recording Lights, Microphone,
and necessary accessories.

(The addition of a "RICO" sound camera costing \$1440,
will provide a complete double system).

Delivery dependent upon supply of B&H used cameras.

"RICO" Junior

Trunk Channel Recording Unit

price: \$3000.00

Complete in every detail: Recording amplifier and mixer,
sound camera, magazine, synchronous motor, picture camera
synchronous motor, camera blimp, 2 recording lamps, con-
denser microphone, spares, accessories.



"Rico" equipment is licensed under the following U. S.
patents: 1789664, 1860502, 1857451, 1827519, 1810705,
and thirty-two issuing and pending patent applications.

RADIO INSTALLATION CO.

6059 Santa Monica Boulevard

LOS ANGELES

Phone: GL-9400

CALIFORNIA

Cable Address, Deming

Laboratory Department

Conducted by EMERY HUSE, A. S. C.

Principles of Sensitometry and Their Practical Application

PART 16

WITH the advent of machine development for negative it was necessary to recompute the formula given in the previous section and essentially slow it down. With the development of film passing through a solution at the rate of approximately 90 feet per minute considerable agitation is set up, thus increasing the rate of development of that negative. With solutions of the strength of that submitted above, combined with the accelerated development in the machine, the development time would be so short as to be almost prohibitive. It was, therefore, necessary to alter the strength and in some instances change the balance of the chemicals in the solution. A typical revised picture negative formula for use in a developing machine operating at speeds approximating 90 feet per minute is given here.

Borax Developer (Machine)

Elon	0.6 grams
Sodium Sulphite	90.0 "
Hydroquinone	1.9 "
Borax	0.6 "
Water to	1.0 liters

It must be borne in mind that this formula is only a typical one. Different machines and different laboratories might require modifications of this. The important point to make, however, is that almost all of the formulas in use for the development of picture negative today are of the four constituent borax type.

From the standpoint of picture positive there is no single formula which fulfills all individual requirements.

There are such things to consider as time of development, contrast, color of the image, and even personal likes and dislikes. The formula submitted here represents a typical picture positive formula in use in motion picture production at the present time. This again is for machine development under conditions similar to those for picture negative.

Picture Positive Developer (Machine)

Elon	0.5 grams
Sodium Sulphite	20.0 "
Hydroquinone	2.4 "
Carbonate	12.5 "
Potassium Metabisulphite	0.7 "
Potassium Bromide	0.5 "
Water to	1.0 liters

In a formula such as this there is considerable tolerance in obtaining the desired contrast.

In the development of sound track negative we have several problems to consider. For the normal variable density track as exposed in a light valve recorder the type of developer used is very similar to the borax formula, although somewhat weakened. Very often either citric or borax acid is added to this borax formula to still further hold back the rate of development. It must be borne in mind that sound track negative is almost universally made on a positive type film having

relatively high contrast. This is done because of the fine grain and high resolving power obtainable with this type of film. The contrasts to which this type of sound recording is developed is of the same order as the picture negative and in many instances somewhat lower. Working with a basically high contrast emulsion it becomes necessary, therefore, to use a weaker formula and one which does not produce high contrasts, thus the use of the modified borax type solution.

In the development of the variable area track it is desirable to obtain relatively high density and contrast. As a result the formula used for the development of variable area negative are of the positive developer type. In many instances the same positive solution can be used that is employed for picture positive. Some laboratories, however, compound a formula which is more vigorous in its density and contrast building characteristics than the regular positive type.

For such sound track as is made on positive film with glow lamps of one sort or another it is usually the case that a positive type of developer is used. This is necessary because of the fact that the exposure with the glow lamp is usually quite weak and falls upon the toe portion of the sensitometric curve.

Up to this point we have discussed in a more or less general way the practical aspects of developers and their use in the production of sound and picture negative and picture positive. We must not forget that the purpose of these articles is to deal with the sensitometric relationship. It is the purpose of sensitometry in the practical field to guide and control the degree of development which is desired in each case. All developers are given careful sensitometric study and the development of any production work, whether positive or negative, is controlled by the use of sensitometric exposure. It is necessary to know the degree of contrast, or gamma, to which each type of film is developed.

Once the developers are established in a laboratory one of the first procedures, from the standpoint of sensitometric practice, is to develop in these solutions, under their standard operating conditions, sensitometric strips so that some idea may be arrived at as to the developing strength of the solution. This general procedure of sensitometric control of production work will be dealt with later but at this point emphasis is going to be given to the more theoretical side of the work in order that a complete understanding may be had of the procedure of arriving at the sensitometric constants desired. It is necessary to assume, therefore, that sensitometric strips are available, having been properly exposed and developed.

Having exposed and developed sensitometric strips in our possession, the next step in our sensitometric routine is to determine the amount of silver in each of the exposed and developed areas. It is not the actual amount of silver in terms of ounces that we are interested in, but it is the light stopping power of each of the various areas. In other words, it is necessary to arrive at the transmission or density of the various deposits. With present day instruments it is quite easy to determine the light stopping power of photographic densities. This is accomplished with the aid of photometric instruments which are referred to in sensitometric parlance as "densitometers." That this subject of densitometry may be more fully understood it may be interesting to consider briefly the evolution of those instruments used for the measuring of the density of photographic deposits.

Technical Accuracy for Sets

(Continued from Page 7)

the artists in our studio art-departments; individually and collectively they are unquestionably the leading creative architects in the world today: but in such instances as the examples cited, they lack the special technical knowledge of men like Mr. Goodman and my other associates, who combine ability as architects with this special engineering knowledge. In the matter of marine settings, for instance, there are a thousand and one minute details which build to complete accuracy, but which, demanding an intimate knowledge of marine practice, are unknown to most architects. The correct placement of handrails, the design and treatment of windows, portholes and doors, the type of hardware and electrical fittings, etc., must all be considered if the set is to appear true to life. In the matter of railway car interiors or exteriors, the same is true: European rolling-stock differs basically from American; but moreover, similar equipment of different countries or even different railroads in the same nation, differ greatly in detail. An English third-class carriage is greatly different from a German one; an American Pullman of 1892 is entirely different in both construction, decoration and accommodation from one of today; some railroads both here and abroad use distinctive color-combinations for their trains—some even for special trains. Aircraft design is even more dependent upon fidelity to detail; and with the popular mind so definitely centred on aircraft, this detail must be preserved. In a recent film, for instance, certain of the characters were represented as leaving Croydon Airport (London) in a machine belonging to the famous Imperial Airways: yet they were shown entering and taking off in a Fokker F-32—a type which does not exist outside of the United States. Such an error might have been avoided by making them take the Dutch KLM line, which parallels the other, and uses smaller Fokkers (which are also in use in America): but definitely establishing the line as a British one, and then showing a basically un-British airplane was a glaring mistake, which was noticed everywhere the film was shown. Similarly, the interiors of foreign and American air-liners differ fundamentally, and naturally require specialized knowledge in design. The same is also true of smaller machines.

It would be obviously unfair to expect such specialized knowledge from the average art-director, whose chief interest, after all, is pictorial design. It is likewise inefficient to assign the design of such specialized sets to an art director, knowing that he will find it necessary eventually to transfer the responsibility to the designers in another department, who have the specialized information which he lacks. The only logical procedure, therefore, is to assign the creation of such settings to the specialists, who, like my associates, will eventually design them in any case. Such a practice will not only relieve the art director of much work and worry, but will save a deal of time and money for the studio, avoid duplicated effort, and—most important of all—assure that, from the outset, the set will be made to heighten the illusion of realism which is the goal of every worker and executive in the studio.

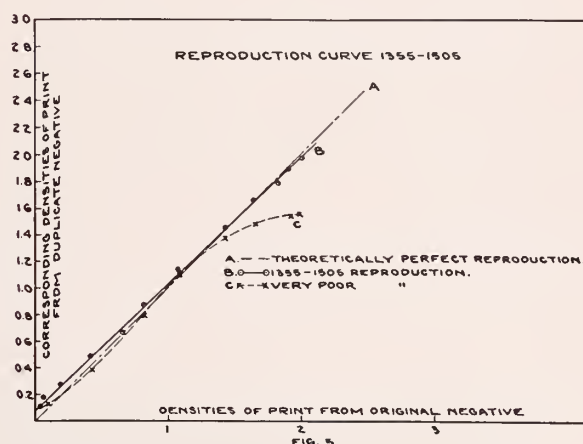
Duplication of M. P. Negative

(Continued from Page 9)

material was found which was entirely suitable in this respect. Figure 4 gives the characteristics of emulsion series 1355, and it is seen from the curves that at a gamma of 1.85, it is necessary to print at a minimum density of not less than 0.40, otherwise a loss in highlight quality will occur. Figure 4-a gives the development time-gamma relationship for this emulsion.

A. Reproduction Curve for the 1355-1505 Process

Figure 5 shows a tone reproduction curve for the 1355-1505 process. The figure is self-explanatory, in that the densities of a print from the duplicate negative are plotted against the corresponding densities of the print from the original negative. The negatives and prints were perfectly matched and the prints from which the densities were taken received identical development.



Curves showing degree of perfection attained in the duplication of negatives.

It is obvious that with this method of representation, perfect tone reproduction is represented by a straight line at 45 degrees to the axes and commencing at the origin (Curve A). Curve B represents the tone reproduction with the 1355-1505 process, and it will be seen that when this curve is compared with Curve A, the process gives almost perfect tone reproduction, but only if care is taken not to print too low on the density scale when exposing the master positive and duplicate negative. Curve C, Figure 5, shows what happened to the curve when these precautions were not taken, and it is seen that the curve is badly distorted.

VII. THE DUPLICATION OF SOUND NEGATIVES

Frequency records with three modulation levels and frequencies varying from 100 to 6000 cycles were duplicated. Listening tests indicated that the upper frequency limit for duplicate negatives was approximately 6000 cycles, which frequency was only discernible at high and medium modulation levels. Tests also showed that a slight increase in ground noise occurred which only became objectionable in the frequency range from 5000 to 6000 cycles.

Prints from duplicate negatives of piano records and vocal selections, for practical purposes, were indistinguishable from the original prints.

(To be continued next month)

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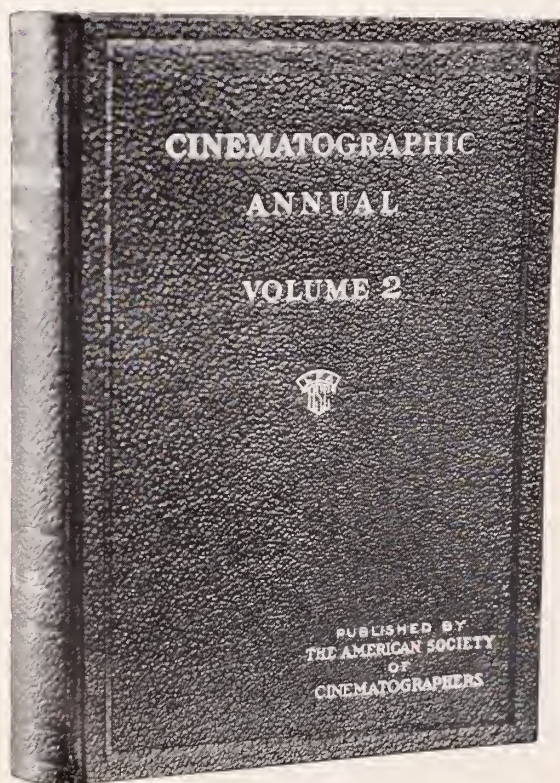
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STYLES from HOLLYWOOD

BATHING SUITS

◆ At upper left is Joan Marsh, M-G-M actress, in a modern "Catalina" bathing suit of skirtless shorts and a brassiere top strapped to the waistline back and showing popular "backless" back.

◆ Charming Maureen O'Sullivan, who appears in "Tarzan of the Apes," is seen at upper right in a two-piece bathing suit that is also very popular at Malibu where the Hollywood stars gather in summer.

◆ Carrying out the idea of blondes in black and brunettes in white, we see at lower left, Anita Page, M-G-M player in a black jersey suit, with the approved brassiere top and skirtless shorts. Maureen O'Sullivan is shown in a one-piece model of white ribbed material edged with black.

◆ And, at lower right, we see Miss Page again in a pose that displays the decidedly popular backless bathing suit that has captured the bathers' fancy in the picture set.



Amateur Movie Making

by WILLIAM STULL, A.S.C.

BY ALL odds the most critical stage in the production of any motion picture is the cutting or editing. Regardless of the skill—or lack of it—evidenced in the previous stages of production, a film is made or unmade by the editing. Intelligent, imaginative editing can often save a poorly-made film, while inept editing has spoiled many an otherwise fine one. The best results, of course, will only follow a perfect combination of production and editing. For not only must the picture be well produced and well edited, but the two operations must synchronize perfectly. Even the best editor will fail if he hasn't the material to work with; and obviously, the amateur editor, less strongly fortified with experience, must receive double aid in his task of completing the amateur production, whether it be a purely personal film, or a more pretentious effort intended for club exhibition or the American Cinematographer's Contest.

Protection

People outside of the professional motion picture industry have often criticized the apparently extravagant manner in which directors photograph a great deal more footage than is actually needed for their picture. Actually, however, this is a very real economy. For if the director, while he has everything assembled for the making of the picture, does not provide ample material for the cutter, he will almost invariably be forced eventually to make the necessary added scenes—which will then prove far more costly in time, effort and money than if they had been made during the normal course of production. In a word, the director, in thus protecting the cutter, is likewise protecting himself and the company. The amateur producer has an even greater reason for securing plenty of protection-shots.

Probably the most important of such shots are closeups. The average amateur film is woefully lacking in closeups, and is thereby made much harder to cut, and extremely uninteresting to watch. Due to the small screens generally used for the exhibition of 16 mm. pictures, detailed action is seldom satisfactorily seen in long-shots; therefore closeups are vitally necessary if the film is to tell its story completely. But closeups are not by any means the only type of protection-shots that are needed. Semi-closeups, medium-shots, and those knee-length shots of two people professionally known as "two-shots" are all important. Furthermore, a plentiful variety of different angles on all scenes is a great aid in cutting, while—in amateur films especially—it is vital that all scenes be comfortably long. If a scene is too long, it can easily be cut; but if it is not long enough, no power on earth can stretch it out. In a word, begin cutting your picture with your camera; be sure that while your picture is actually in production that you cover every point; that while you are telling your story, you tell it completely. Supply the cutter (whether it be you or another) with more than enough of everything, so that he will surely have an adequate variety of scenes, angles and details to work with.

The Cutting-Room

The actual physical requirements for cutting are simple. All that is necessary is a pair of rewinds (the double type is preferable, for with them one may run the film in either direction); a splicer; and a projector. A "stripping flange" is a very useful accessory. This is virtually a single-sided reel, and may be purchased at any theatre-supply store. It is possible to make a makeshift stripping-flange out of an ordinary

reel by removing one side; but 16 mm. reels are so constructed that this seriously weakens the structure, so it is really advisable to buy a regular stripping-flange, and have the hub machined out to fit the 16 mm. rewind-shafts. The stripping-flange is used for winding up lengths of film which it is not desired to keep on reels. After the film—whether it be four or four hundred feet—has been wound onto the flange, a quick turn of the crank in the opposite direction, while the film is held from turning, will remove the film easily—and there you have your film rolled up far better and easier than could be done by hand.

Another pair of useful accessories—and ones which can be made at home—are a system of racks or pigeon-roles at the rear of the cutting-table, for the storage of short rolls of film, and a large hamper, cloth-lined, into which the film may be unrolled for hasty inspection. It is a good idea to have several small hooks on the top of this hamper, upon which lengths of film may be hung by a perforation. An inspection-light set into the top of the table is also useful, while users of the negative-positive system will find a pair of synchronous rewinds (such as the British "Ensign" twin-winders) useful, as this permits them to cut negative and positive together.

The actual operations of cutting—that is, splicing—are too well known to bear repetition here; but one thing I must say—especially to entrants in our contest: look to your splices! See to it that they are firm, neat, and accurate enough to pass any projector. Several of the films already received for the contest have been carelessly spliced, causing the projector to jump or jam at each splice. This, while not perhaps a definite flaw, is naturally enough to distract the attention of the judges from the more important features of the film.

Editing

Although the mechanical operations of cutting and editing are the same, the resemblance ceases there, for the former is purely mechanical, while the latter partakes of the artistic. It is with the latter that we must chiefly concern ourselves.

The editor must first know the subject of the picture—the story that the film is to tell, whether it be a drama, a scenic film, an educational or documentary production, or a simple family record. Then, he must know intimately the material with which he is to work. He must study the film—uncut—on the screen several times before he even begins to plan. Then he should visualize in his own mind how he can bend the material given him to tell the tale that is to be told. Of course, there can be no arbitrary rule laid down to govern the cutting of all films, for each picture presents its own problems, and must be treated individually.

Once the treatment has been visualized, the actual assembly can be begun. The way this is done must, of course, depend entirely upon the way the picture has been shot. In some cases, all that will be necessary will be to cut the closer shots into their proper places, and to join the sequences together. In other cases, where the film has not been made in exact continuity, it will be necessary to break the film down into the individual scenes, segregate the related scenes and sequences, and then join them together. In such instances, it is well to prepare a written "cutting continuity"—a list of the scenes in the order in which they belong. Then, though you may have fifty or a hundred small one-scene rolls, you can easily put them in sequence in the rack of pigeon-holes behind the

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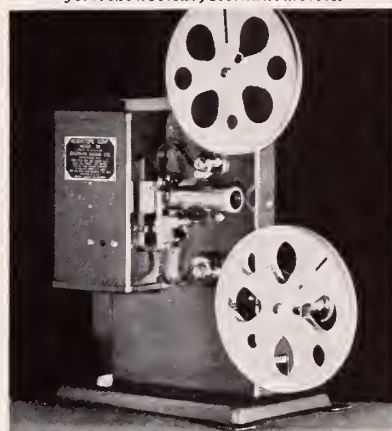
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Super-Sensitive 16 for Exteriors

by **HAL MOHR, A.S.C.**

WHEN Super-Sensitive Panchromatic film was first introduced to professional cinematographers, advantage was at first taken only of its obvious superiority for interiors. Since its decidedly greater speed was of relatively little importance for exterior scenes, many cinematographers preferred to use Super-Sensitive only on interior scenes, and continued to use the regular panchromatic film, with which they were naturally more familiar, for exterior work. It is only recently that the majority of professional cinematographers have begun to become aware of the advantage of using Super-Sensitive film at all times, whether indoors or out.

Amateur cinematographers appear to be following the same course. Super-Sensitive film is, of course, of even greater importance to the amateur worker, with his more limited lighting equipment, than it is to the studio worker. On the other hand, when the amateur attempts to use Super-Sensitive out of doors, without filters, he finds that its increased speed is his undoing, for Super-Sensitive, unfiltered, is so fast that even the smallest stops provided on 16mm. cine lenses generally admit so much light as to overexpose the film. Nevertheless, from my own experience in using Super-Sensitive film in both my professional 35mm. work (I had the good fortune to photograph the first production made on this type of film) and in my personal 16mm. work, I cannot too strongly advise the use of Super-Sensitive film on all occasions.

The secret of the successful use of this type of film for exterior cinematography is an understanding of the use of color filters. Naturally, the use of a reasonably heavy filter will increase the exposure to a point where it may be conveniently controlled by the diaphragm adjustments ordinarily provided on amateur apparatus; but this is actually of only secondary importance. The real value of filtering lies in the fact that only through the use of filters can the real benefits of panchromatic film of any type be realized.

It will be remembered that the old Orthochromatic film was extremely partial to the blue rays, at the expense of its sensitivity to light of any other color. In Panchromatic and Supersensitive Panchromatic films, this preference to the blue has continued, though with increasing sensitivity to the red, yellow, green and other colors. In order to lessen this preference for the blue components of a scene, various filters are used which retard the passage of the blue rays to a certain extent, and permit the weaker red, yellow, and green rays to do their work. Since the filters remove a part of the light without adding anything to take its place, the exposure must be lengthened in the exact proportion that the filter retards the blue rays. This is true of all types of film; but the exact degree in which the exposure must be lengthened depends entirely upon the speed and color-sensitivity of the film used. Clearly, if a filter which cuts out, say 50% of the blue light, is used on Ortho film, which is only very slightly sensitive to the other colors, the exposure must be increased considerably to obtain a satisfactory exposure; the same filter, used with regular Panchromatic film, which is moderately sensitive to these other colors, will require a smaller increase in exposure; while the same filter used with Super-Sensitive Panchromatic film, which is not only faster overall, but highly sensitive to red, yellow and green, will in this case require only a very small increase in exposure.

This change in color-sensitivity naturally makes the same filter give different effects on different types of film. Therefore, as many professional cinematographers have found out, one may know a great deal about the effects of filters on

regular Panchromatic film, and yet have a great deal to learn about the use of the same filters with Super-Sensitive film. The results, however, are eminently worth the additional trouble of learning.

The increased speed naturally decreases the added exposure necessary with any given filter. If, for instance, we have a filter which, when used with regular Panchromatic film, requires an increase of 3 times, the same filter, used with Super-Sensitive film, will require an increase of only 1½ times in the exposure. This is obviously an advantage to the owners of cameras equipped with slower lenses; with an f:3.5 lens, for instance, a 12-times filter on regular Panchromatic film increases the exposure beyond the capabilities of the lens, while the same filter, used with Super-Sensitive film, requiring an increase of only 6 times, is quite practical. The same is true of many of the extremely fast lenses, which tend to lose both depth of focus and sharpness when opened to their extreme apertures.

But this is not all. The differences in color sensitivity between the regular and Super-Sensitive Panchromatic emulsions is such that a filter will produce entirely different results when used on the two films. In the main, to produce a given result on the faster film one must use a considerably heavier filter than he would use to produce the same result on regular Pan. To produce, for instance, the correction given on regular Pan by the orange-yellow "G" filter, the user of Super-Sensitive would have to use a decidedly heavier red filter—either an "A" or an "F". On the other hand, the sensitivity of the faster film is such that the film already embodies the correction given by the "K-2" filter; that is, Super-Sensitive film will give, without the use of any filter, the same result that ordinary Panchromatic will require a "K-2" filter to obtain.

The choice of film really therefore depends upon the sort of picture you want to produce. If you want to have a picture that is obviously filtered in appearance, use the regular film. If you want a picture which is predominantly natural, and yet embodies the desired correction (without exaggeration), use the Super-Sensitive type.

The most useful filters for Super-Sensitive film are the "G", the "23-A", the "29-F", the "B" and—if one wants to make night-effects by daylight, the "72-Gamma." The recently-introduced "X" filters, though frequently used by amateurs, are really of little use, as they were made especially for a certain still portrait-film, and are not intended for motion picture use, either professional or amateur.

The "G" filter is by far the best for all-around use where a moderate correction is desired. It requires an increase of slightly less than a stop and a half in exposure. For greater correction, the "23-A" is unexcelled, for although it is a red filter, it does not make people's faces photograph unpleasantly light, and it gives a very pleasing correction, with fine contrast, and cuts through ordinary haze like a knife. When working in unfavorably flat lights, the "F" filter is a tremendous aid, for it increases the visual contrast, and literally puts contrast into scenes where otherwise there could be none. It requires an increase of six times in exposure—approximately three stops. The "B" filter, which is green, does just the reverse, and softens unpleasantly harsh contrasts. Like the "23-A", it requires an increase in exposure of a stop and a half. The "72" or "Gamma" filter is an extremely heavy one; when used to secure normal scenes with its extreme

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Using 16 mm. Negative Film

by **DANIEL B. CLARK, A.S.C.**

FAR too many of us who use 16mm. cameras are prone to overlook the advantages offered by negative film. This is natural enough, since the reversal type of film is more widely distributed, and most of us are in these days inclined to be conservative, and reluctant to spend money experimenting with something unfamiliar as long as we can get by with the equipment or materials to which we are accustomed. Nevertheless, the negative-positive system has much to recommend it; and, in intelligent hands, will give excellent results.

The outstanding advantage of the use of negative film is, of course, the fact that, just as in ordinary still photography or 35mm. cinematography, the wear and tear of actual use is taken up by the positive print, leaving the negative in perfect condition for the making of fresh, undamaged duplicate prints at any time. In addition, these prints may be made on any of a large variety of tinted-base positive films, allowing the use of a considerable variety of colors for special effects. Furthermore, although the cost of negative-positive and reversal are approximately the same for the first print, the cost of making duplicate prints with the former is appreciably lower than that of duping reversal film, and the results more satisfactory.

The outstanding difficulties connected with the use of negative film are the matter of grain, and the difficulty of finding laboratories whose work is of a quality equal to that of the many reversal-precussing plants of the Eastman and Agfa companies. But both of these difficulties can be surmounted.

Since the negative emulsion coated on 16mm. film is actually identical with that coated by the same manufacturers on their corresponding 35mm. products — which are used for photographing many professional films, including such fine examples of photography as "Shanghai Express" and "Grand Hotel"—the film in itself cannot be said to be inherently grainy. The responsibility for the apparent increase in grain must be divided between certain factors inherent in 16mm. cinematography and inept handling by the amateur cameraman.

The mechanical reasons for the apparently large grain shown in many attempts with 16mm. negative are inherent in the 16mm. system. In the first place, the frames are far smaller than on 35mm. film, and—even with the small screens commonly used in homes—the picture, and with it the images of each minute grain, is subjected to a far greater degree of enlargement than is the case with 35mm. film. But this is not the real seat of the trouble: in viewing a 35mm. picture, the audience is never very close to the screen, while in viewing a 16mm. film, the audience is almost on top of it. This proximity makes every detail—especially the objectionable ones — take on an unnatural prominence. In viewing the average 16mm. film, the audience is as a rule hardly more than five or six feet away from the screen; in viewing a 35mm. film, the audience is on the average from forty to a hundred feet from the screen. At this distance, normal grain is imperceptible, even on a large screen; but try sitting in the front row of a good-sized theatre: although you will still in all probability be twenty or thirty feet away from the screen, you will become painfully conscious of the grain, and the entire picture will seem like a seething mass of squirmy maggots.

But, you will ask, why is it that I see the grain when I use negative, and not when I use reversal film? There are

two reasons: one of them has to do with the chemistry of the film; the other with the way you use the film yourself.

It is axiomatic that slow emulsions have less grain than fast ones; likewise that positive emulsions have less grain than negative emulsions. Now, reversal film, despite the fact that the nature of the reversal process permits it to have an effective speed identical with that of a corresponding negative emulsion, is basically a positive-type of emulsion, and therefore relatively slow. By the same token, its grain is finer.

So much for the inherent grain-characteristics of negative 16mm. film. Now—what can be done about it? The answer is—understand how it works, and use it properly! Then you will be able to produce pictures in which the grain compares favorably with that of reversal films.

Anyone who has studied or read anything at all about photography knows that a film—either still or cine—consists of a celluloid base, upon which is coated an emulsion consisting of microscopic particles of silver-bromide, treated so as to be sensitive to light of different colors, and held in suspension in a thin layer of gelatine. Now, when this film is exposed to light, the action of the light-rays effects some rather intricate chemical and physical changes upon the sensitive silver particles. When the film has been developed by treatment with the proper chemicals, it will be seen that the light has turned these tiny, white particles of silver bromide into black particles of metallic silver. Just how dark these particles are is determined by the strength of the light reaching them. When too much light strikes them, they explode, like a kernel of popcorn, and become tremendously bigger than they would normally be. This is what happens when you overexpose your film. Since these tiny particles are all so greatly over-expanded, it can be seen that they will produce correspondingly large individual images on the finer-grained positive film. It is these expanded images of the "popped" silver particles of the negative emulsion which show up on the screen as grain, and look like little worms crawling over the screen.

But since the silver particles only explode this way when exposed to too much light—that is, when the picture is overexposed—the obvious remedy is to underexpose the picture slightly. A great deal of harm has been done by unthinking writers who have said, "When in doubt, with negative film, overexpose a trifle; with reversal film, underexpose a trifle." The fact of the matter is that with either film the best results are secured through a slight underexposure, especially since, with negative, the tone and density of the resultant print can be controlled in the printing.

A further aid in overcoming the grain with negative film is the use of the "Non-Halation" or "Greyback" type of film.

A number of people have stated that the use of color filters with negative film increases the grain. This is not so; they are mistaking an incidental for the cause of their troubles. As has just been pointed out, it is overexposure that so increases the size of the grain that it becomes objectionable. What has caused these good people trouble when they have attempted to use filters is the fact that they have not calculated correctly the increase in exposure demanded by the filters; they have erred on the side of overexposure, and accordingly burst the silver particles until they became evident on the screen. No, if filters are properly used, they cannot create grain. I recently saw a most interesting reel of filter tests,

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Making Motion Picture Film

(Continued from Page 17)

picture art—possible. The silver bromide and other silver salts of the emulsion are very much more sensitive to light than the silver nitrate from which they are derived. Silver nitrate is therefore merely a raw material for the emulsion-makers when they carry out the next stage of making emulsions; but the care taken in making silver nitrate, so briefly sketched here, assures the emulsion department that its most important raw material is reliable.

Tall chimneys are necessary—366 feet tall in our typical plant—to carry any fumes and soot high into the upper air whence they will blow away far from the manufacturing confines. Fumes evaporated off in the process of making silver nitrate are thus disposed of. Similarly, what soot leaves the power houses after efficient burning of the daily 500 tons of coal goes into the chimneys.

Well are these precautions, for no man in this very large industry knows which particular ten or twenty feet of negative may catch the "shot" of a lifetime. Even if it were not of paramount importance to have the many millions of feet running through studio cameras and theater projectors perfect, it would be necessary to take unlimited pains to avoid flaws if only to be sure that the film should not fail the great opportunity that may come to a cameraman only once in a lifetime—perhaps a unique news scene, or a hazardous plane crash by a double, or even the record of a fleeting glance that wins the public to some sensitive star.

How the film industry has progressed in its safe-guards for film cleanliness and quality and stability may be observed in the department of our typical plant where the emulsion is coated on the transparent, flexible film base. There may be veterans still active in the motion picture industry whose memory extends back far enough to give them perspective on the resulting film improvement.

For something like ten years after George Eastman began the manufacture of film in 1889 the process was to form the film base, and then to coat it with the emulsion, on a long plate-glass table. It is obvious, in these days of 1000-foot reel lengths, that 1000-foot tables would be impractical; but the machine age of film-making has conferred much greater benefits than the additional lengths possible. The close control of the emulsion coating process resulting from continuous machine operation has been important principally in yielding more perfect film. In other words, control of the conditions, including atmospheric conditions, under which the emulsion is applied to the film base is a positive manufacturing factor in addition to its perhaps negative importance in keeping anything from going wrong.

In the glass-table stage of film manufacture, whatever air happened to be in the room was good enough to dry the film regardless of dust or the weather outside—with what results in the way of perfection most of us can remember from the nickelodeons. Now, instead, an elaborate and modern system admits to the coating machines only air that has been washed, filtered, and brought to exactly the proper temperature and the right degree of moisture content. The enormous refrigeration plant of our typical film manufactory is important in doing that.

In the interest of cleanliness, even the many miles of copper air ducts in the basement below the emulsion coating machines are frequently flushed and polished, and the air comes into the system through filter bags.

Machine attendants of course wear white laundered suits and caps. These rooms, where daily miles of film are coated in the dark, are cleaner than hospitals or bakeries, to say nothing of other industries where daylight penetrates.

Motion picture film is 35 millimeters wide. That sounds simple enough, an absolute fact and so it is. Projectionists need not concern themselves about it. But an exact film

width is not heaven-sent, any more than money grows on trees. If the film were not exactly 35 millimeters wide—any foot of it—there would be no insurance against trouble in the projectors. Somebody in the typical film manufactory had to worry about the width or projectionists would be worrying instead.

Leaving out of consideration the history of how the 35-mm. standard was set, we shall find by inquiry that cutting the film to the prescribed width once was a major problem—until it was solved. Like a thousand other details in making film, which is probably the most delicate product manufactured on a huge modern scale, the problem of exact-width slitting was solved and became just one more factor in justifying the adage that "trifles make perfection."

How this particular problem was solved suggests a visit to another interesting department of our typical film plant of 75 major buildings and 400 acres. Slitting machines sufficiently precise could not be bought so they had to be made.

Film-making was a mechanical art as soon as it was a chemical art. Mechanical ingenuity, plus a very large and elaborate machine shop employing extraordinarily skilled mechanical craftsmen, turns out special film-making machinery for this typical film manufactory on a scale commensurate with the mighty mileage of film put forth.

Micrometrically accurate machines to slit wide bands of film off the emulsion coating machines into unvarying 35-mm. widths are only one of the mechanical products of a machine-making department that loses its identity in the necessary general perfection of the raw material for the motion picture industry. The phenomenon of a highly mechanical industry buried within a chemical industry is matched by the strange realization that many of the resulting machines perform their operations in darkness.

Perforations along the edges of motion picture film are only perforations to the men who use the film; but, to the mechanical minds and hands employed in making perforating machines that will clip, clip, clip, in darkness, putting perfectly accurate perforations on thousands of film miles, the modern apparatus represents many years of patient improvement.

... And ever the vigilant watch for a speck of dust or a pin point of grease on the film continues.

It is of such detailed care—of which one can safely estimate 97 per cent even of the technical readers of this article never have heard—that film-making is made.



New 16 MM. Camera

(Continued from Page 11)

simultaneously with the Ciné-Kodak Eight. They will be Models 20 and 60.

The Kodascope Eight, Model 60, is equipped with a 100-watt pre-focussed projection lamp with a decentered filament. An efficient optical system gives brilliant pictures on the 22 by 30 screen. The projection lens has a focal length of one inch. A high-speed motor-driven rewind requires no changing of belts or reels, and provision for plugging in a table lamp to turn on automatically when the projector is turned off, are other features.

The Kodascope Eight, Model 20, also has a one-inch lens. It is equipped with a dependable lamp for adequate illumination. The size of both projectors permits very easy carrying.

As in the case of full-width 16 mm. movies, titles will be available for splicing into film exposed in the Ciné-Kodak Eight. Miscellaneous successful professional motion pictures for showing with the Kodascope Eight also will be prepared, under the name "Cinegraph Eight." Further information regarding this new camera and projector may be obtained by writing the Eastman Kodak Company at Rochester.

The Elements of Makeup

by **JAMES BARKER**

Makeup Department, R-K-O Studio

WHEN the amateur cinematographer undertakes the production of films more pretentious than ordinary animated snapshots, he frequently finds that his people do not photograph as well as they should. Accordingly, he blames his photography; yet nine times out of ten, it is not the photography that is at fault, but the fact that he has overlooked the vital factor of makeup. For makeup is to cinematography what retouching is to still portraiture: it serves to conceal facial blemishes, to enhance the effectiveness of attractive features while "dressing up" the less attractive ones, and to give the player a smooth, even-textured complexion of exactly the right tone and contrast to suit the natural coloring of hair and eyes. So great is the importance of makeup in professional motion picture production that every studio maintains a large department exclusively devoted to makeup, and, before the actual start of each production, photographs many thousands of feet of makeup tests to ensure absolute perfection of this detail.

To the amateur producer, the subject of makeup is of even greater importance. The amateur does not have, as a rule, anything remotely approaching the resources of either skill or material that the professional can bring to even the smallest production. I realize that many amateur cinematographers are remarkably expert, but even so, they do not have either the equipment or the long years of experience which enable the professional cinematographer to control his lighting—both indoors and out—in such a way as to minimize the facial blemishes of his players, and make them photograph the most effectively. Not one amateur in a hundred uses reflectors on his exterior scenes, or possesses more than three or four lighting units for making interiors. Of course, exteriors can be made without reflectors, and interiors can be satisfactorily illuminated with only a few lights: but in neither instance can there be any attempts at modelling—at using the lighting not merely to make an exposure possible, but to make the players photograph most effectively. Therefore, makeup is mandatory.

Unfortunately, however, very few amateurs have much of an opportunity to learn anything about motion picture makeup. Women, of course, inevitably know more or less about the application of makeup for daily wear but that is an entirely different thing from theatrical or motion picture makeup. In places where one can recruit one's cast from players in the Little Theatre groups, one can expect at least some understanding of stage makeup: but though this is closely akin to screen makeup, it is still by no means the same thing. It is, therefore, the purpose of this series of articles to briefly explain the use and application of makeup, both for straight and character parts.

Of course, makeup, being a distinctly individual thing, cannot be absolutely standardized, nevertheless, experience has given us certain basic principles from which to work.

In the first place, we have learned that the general tone of the makeup must offer a definite degree of contrast with the natural coloring of the player. If the player is a brunette, the makeup required is not—as one might suppose—a predominantly dark one, but a light one, in order to display the dark hair and eyes to their best advantage. Similarly, a blonde requires a comparatively dark makeup, not alone to accentuate the bloneness, but because the cinematographer almost always lights blondes in a higher key than brunettes, using "hotter" back-lighting, and consequently a more intense front-lighting in order to balance things. Similarly, men require darker makeups than women.

Although the amateur pays far less attention to the key of the lighting than does the professional, it must be observed that if one works in a relatively low key, he will get the best results if the players are made up relatively light; this lighter makeup compensates to some extent for the lessened intensity of light—particularly front light—used. By the same reasoning, if one works in a higher key, the players will require darker makeups to balance the greater intensity of light used.

Similarly, the makeup must be balanced to the type of film used. Of course, in professional work, Super-Sensitive Panchromatic film is used almost exclusively. The amateur, on the other hand, is rather prone to use the less expensive types, reserving the Super-Sensitive film for interiors almost exclusively. Professional experience has shown that this is not the best policy; but, so long as scenes made on the different types of film are not too closely intercut, it is possible to compensate to some extent by the use of different makeups. It is never advisable, however, to attempt to use both Ortho and Super-Sensitive Pan in the same picture, for although the faces can, by means of different makeups, be made to photograph almost uniformly, the different color sensitivity of the two emulsions will make costumes, etc., photograph quite differently.

Fortunately, the various manufacturers of makeup materials have agreed upon a standard series of designations for the different shades of grease-paint, powder, lip-rouge, etc., and have further standardized their products so that the different components which are normally used together all bear the same number. If, for instance, the grease-paint which forms the base of a makeup is that termed No. 24, the other essentials—powder, etc.—will bear the same number. The numbering is further arranged so that in every case, the lower numbers designate the lighter shades, while the higher ones denote the darker shades.

Taking the ordinary Panchromatic film as a basis, the standard makeup for women would be based on a No. 24 grease-paint, and for men on No. 26—two shades darker. The compensation required for the darker makeup of blonde women is not a complete change of makeup, but merely powder one shade darker than the grease-paint used. The makeup products used must, of course, be of the newer series known as "Panchromatic Makeup," which is of an entirely different shade from either the earlier screen makeup, used with Ortho film, or stage makeup.

The use of the faster "Super Sensitive" film naturally changes the makeup somewhat. We have found that the added sensitivity of the emulsion has the same effect as the use of more light. Therefore the makeup must be darker than for ordinary Panchromatic film. Taking again as our basis the No. 24 makeup for ordinary Pan, we must, when we use Super Sensitive film, darken the makeup two shades. In other words, our standard for Super Sensitive film will be a No. 26 for women, and a No. 28 for men. By remembering this, it is relatively easy to balance the makeups to enable the use of Super Sensitive film for interior scenes and regular Panchromatic for exteriors.

If on the other hand, one wants to use the old Orthochromatic film, one must also take into consideration the radically different color-sensitivity of the Orthochromatic emulsion, and the fact that the Panchromatic makeup materials are of a predominantly reddish-brown shade. Oddly enough, this dif-

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Wood-Watson 16 mm. Sound Printer

by **HAL HALL**

FROM H. T. Cowling, of Rochester, N. Y., comes one of the most interesting, and perhaps one of the most important, announcements in the 16 millimeter field in months. It is the announcement of the Wood-Watson 16 mm. Sound Printer. With the theatres giving thumbs down to advertising pictures and propaganda, the manufacturers have been turning to 16 millimeter to meet their needs, and the development of the RCA 16 mm. Sound Reproducer stimulated interest in this field by those interested in advertising and promotional methods.

The speed with which the 16 mm. sound-on-film has been developed has done much to place the 16 mm. size in the semi-professional field; and with 16 mm. sound-on-film cameras about ready to be placed on the market, laboratories have been casting about in an effort to prepare for the developing and printing of 16 mm. sound-on-film. The first demand is for an optically reduced 35 mm. sound production to be reduced and re-recorded to fit the 16 mm. sound-on-film projectors. And while it is simply necessary to make a 16 mm. reduction print from the 35 mm. negative, so far as the picture is concerned, getting on the sound track is not so simple. The best results are usually obtained by making a re-recorded 16 mm. negative of the sound track, after which the sound track is printed by contact on the above mentioned reduced picture positive.

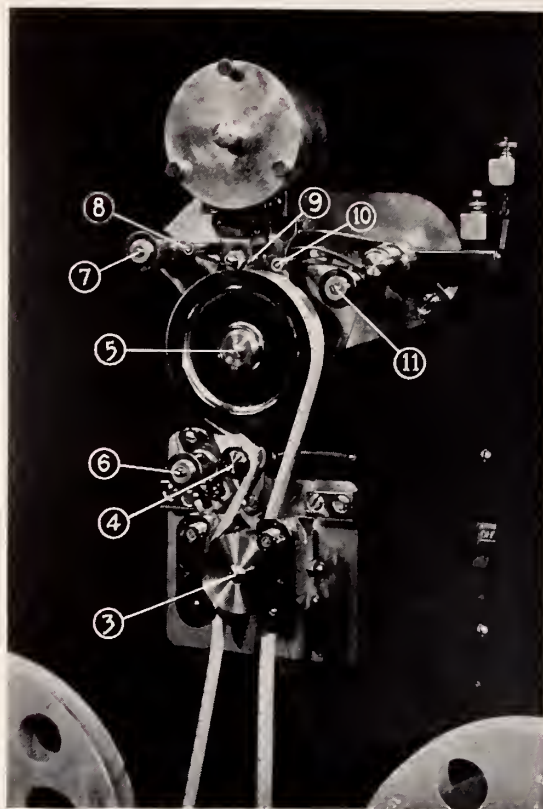
However, since only acetate 16 mm. raw stock is sold to the trade, the question of shrinkage during processing is of considerable more importance than with the 35 mm. size, where nitrate raw stock is available to the trade. Since the 16 mm. sound-on-film projectors operate at 36 feet per minute as compared to 90 feet per minute for the 35 mm. projectors, or $2\frac{1}{2}$ times slower, it must be remembered that the definition required for the 16 mm. sound-on-film must be correspondingly greater. The 16 mm. sound track must be printed continuously, so that some method be devised to automatically compensate for the extreme shrinkage of the 16 mm. acetate sound negative stock; at the same time taking care of the critical definition so essential to good results.

It is in this connection that Mr. Cowling, who is distributing the Wood-Watson 16 mm. Sound Printer, claims that this printer solves the shrinkage problem. Mr. Cowling claims that the new printer compensates for this shrinkage.

"This automatic shrinkage compensation is the basis for the entire design," says Mr. Cowling, "and accounts for the superior results obtained on this printer. In the old type sprocket printers the films, being of different lengths, were forced to slip past each other thus blurring the high frequencies and often introducing the so-called sprocket noise in spite of most careful adjustment. In the Wood-Watson printer the shrinkage of the negative is automatically compensated to exactly fit the positive, and there is no tendency for the films to either creep or lose contact.

"What at first appeared to be a very difficult process, now becomes simple and available to every laboratory. Existing 35 mm. sound films can be reduced to fit the 16 mm. requirements. Also, 35 mm. silent films can be re-edited and adapted to the 16 mm. sound projectors, either by preparing a 35 mm. sound track negative and re-recording, or having a 16 mm. sound track negative recorded direct for the silent production."

The illustration accompanying this article shows quite clearly the operation of this new printer. The 16 mm. sound negative is wound emulsion side out on one reel, and the positive film is wound on another reel, emulsion side in. You place the "start marks" together at left of sprocket, No. 3, and close that gate. Then, thread the positive around No. 4 and No. 5



The Wood-Watson printer.

back to the right side of the sprocket. Thread the negative around No. 6 and No. 7 under No. 8 and No. 9, then over No. 10 and No. 11 to the sprocket. Pull up the positive until No. 4 is vertical, and then pull the negative tight and back it off about $1/16$ of an inch until it engages the sprocket teeth, and close that gate. Thread the take-up reels and turn on the switch. The operation of the printer seems quite simple, and if the claims of the manufacturer are to be considered—and coming from a man as reliable as Mr. Cowling, they must be—this device should be of more than considerable interest to laboratories and those interested in 16 mm. sound-on-film production. It indicates that the 16 mm. sound-on-film field has a future that may astound many of us with its enormity.



Debie Reorganized Under H. R. Kossman

NEW York headquarters of Ande Debie Equipment Manufacturing Co. of Paris has been reorganized under the direction of H. R. Kossman. A service department, with a complete line of parts carried at all times, has been established at the New York address, 115 West 45th St. Equipment manufactured by Debie includes a full line of cameras, projectors, printing machines and sound equipment. The products are widely used in European countries and are now being adopted on this side.

Supersensitive for 16 MM.

(Continued from Page 32)

over-correction, it demands an increase of 12 times in exposure; however, as its principal use is in the making of night-effects, which depend upon a skillful combination of over-correction and under-exposure, in actual use it does not require such greatly increased exposures. The exact increase for night effects can only be determined by experiment, and with reference to the exact effect desired.

Kodacolor users are already familiar with the Neutral-Density filters. These are rather useful in ordinary photography, not for controlling the exposure, as in Kodacolor work, but for reducing excessive contrasts such as those provided by glaring white pavements or buildings, or by the harsh white sand encountered at the beach or in the desert.

To briefly summarize the matter: whether or not you are accustomed to the use of filters, you will find the matter of learning how to filter Super-Sensitive film slightly harder than filtering ordinary Pan; but the results achieved will be well worth it, for the Super-Sensitive emulsion will not give you better results indoors, but outdoors as well. When used with the proper filters—and these need not be many—Super-Sensitive film will give you a better, more natural picture, and enable you to get better pictures under unfavorable light conditions than can be hoped for any other way.



The Coming Eclipse

(Continued from Page 13)

a large image of the sun is desired and I suggest that a telephoto lens of from 12 to 20 inch focus be used. As the passing of the eclipse consumes some two hours, it is advisable to speed up the first and last partial action by stop cranking so the action is more rapid on the screen. About one frame every 15 seconds is ample. The moment the sun is completely eclipsed the corona is visible and normal speed should be used. Obviously, there is a tremendous change of exposure from the full, direct sun to the totally eclipsed sun when the light is only equal to about half moonlight. Roughly, I suggest that the full sun exposure—using super-sensitive, anti-halo film, 170 degree shutter and 24 frames per second, and no clouds to obscure, would be about F. 64. After the sun is three fourths covered by the moon, the lens is slowly opened up—however, bearing in mind that as long as any portion of the sun remains, it is intensely brilliant; and if over-exposed will "flare" so badly as to ruin definition.

The moment totality occurs open the lens to its full aperture to catch the faint light from the corona and prominences. After totality the sun begins to appear again and then the exposure is decreased in reverse of the first part of the eclipse. I do not recommend filters as there is no need for their real purpose, and the added tendency of the glass to flare when used in this type of work might spoil a clear image. In this connection it is a natural tendency of the lens itself to flare or give "ghost images" when such a contrasty object as the sun is photographed. About the only remedy I know of is to keep the lens dead centered on the sun at all times during exposure.

When the astronomers arrive at their eclipse camp to photograph the eclipse, all instruments are set up and carefully adjusted long before the date for the eclipse. Sometimes weeks are spent in preparation. Figure 5 shows the eclipse photographic camp equipment used by us in the 1930 eclipse. In the foreground you see the spectroscope camera, the long, table-like contraption. At left center is the heliostat, the mirror equipment upon which the cameras are trained. In the background on the platform are seen frames of ground glass used in photographing the shadow bands. In the astronomer's camp each member of the party drills constantly so that he will not make a mistake in carrying out his task when the eclipse comes. Success lies in seeing that every possible chance of

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failure is eliminated. At a certain hour, minute and second operations begin, and every man must know just what to do and do it.

This coming eclipse will be the last opportunity to view a total eclipse of the sun from the United States until August 21, 2017, so if you wish to photograph an eclipse this will be your last chance unless you travel many miles to do it.

Author's Note: The sources used in preparation of this article are Dr. Mars Baumgardt, Simon Newcomb in the Encyclopaedia Britannica, and "Eclipses of the Sun," by S. A. Mitchell, published by Columbia University Press, which I recommend to anyone wishing to pursue the subject.



Academy Considering Award for Short Subjects

FOLLOWING the announcement of the regular Academy Awards program for 1932, Chairman David O. Selznick of the Awards Committee has announced that special awards of merit for the outstanding short subjects of the year are being contemplated by the Academy of Motion Picture Arts and Sciences. A series of meetings of the various Academy members engaged in short subject production is now under way. Present plans indicate recognition of three basic classes of short subjects: Mechanical Films, such as cartoons, etc., Novelties, and Comedies; although it is not expected that the entire series of awards will be duplicated for the short subjects.

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Amateur Movie Contest

In addition to the four cash prizes, announced on the opposite page, the following prizes will be awarded by various equipment manufacturers and dealers:

The BELL & HOWELL COMPANY will also present two equipment prizes—First, a choice of a Filmo 70DA Camera, listed at \$280.00, or a Filmo Model J. L. Projector, listed at \$298.00. Second, a choice of any Standard Cooke Telephoto Lens, priced from \$60.00 to \$95.00. To be given to prize winners who made their pictures with a Filmo. The EASTMAN KODAK CO. will present a Model K Cine Kodak, with a f. 1. 9 lens, complete with carrying case, priced at \$150.00, for the finest example of photography in an out-of-doors picture regardless of whether it wins a cash prize or not and without consideration of story subject. MAX FACTOR MAKEUP STUDIOS will present one of the famous Max Factor Make-up Kits, completely equipped, to the winner of first prize of \$500.00. HOLLYWOOD FILM ENTERPRISES, INC., offers a Model B Cine Voice, Home Movie Talking Picture Machine, complete with carrying case, priced at \$129.00, to be given to that person or Amateur Club, located in California, who enters the best 16 mm. or 9½ mm. picture from California, regardless of whether the picture wins a cash prize or not. In other words, the prize goes to California's best entry. This home talkie equipment may be attached to all projectors, either 16 mm. or 35 mm. It makes any projector a talking picture machine. HOME MOVIE SCENARIOS, INC., offers two prizes as follows: To the winner of first prize of \$500.00, one Scenario (choice of entire group), one H.M.S. Matte-box, choice of any H.M.S. Filter, and one H.M.S. Scene Slate. To the winner of second cash prize of \$250.00, one H.M.S. Matte-box and choice of any H.M.S. Filter. In case the picture winning first prize is made from an H.M.S. Scenario, an additional cash prize of \$100.00 will be paid by Home Movie Scenarios, Inc. If second prize is made from an H.M.S. Scenario, an added prize of \$50.00 will be awarded; and an added prize of \$25.00 will be given winner of third prize if made from an H.M.S. Scenario. METEOR PHOTOLIGHT COMPANY will present the winner of FOURTH cash prize the following valuable lighting equipment: A Meteor Double Photolight complete with two 500 watt NERON bulbs, retail price, \$30.00, a Meteor Photolight Tripod model, complete with NERON bulb, retail price, \$18.00, and a Meteor Photolight Table model, complete with bulb, retail price \$13.50. Value of prize, \$61.50.

AND—MORE PRIZES WILL BE ANNOUNCED

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. ¶ A total of **\$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of \$500.00 for what its judges consider the best 16 millimeter or 9½ millimeter picture submitted in this contest. \$250.00 will be given as second prize; \$150.00 as third prize; and \$100.00 as fourth prize, a total of \$1000.00 in prizes.

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after

the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they MUST BE photographed on 16 millimeter or 9½ millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg., Hollywood, Calif.

Enclosed please find Check, or Money Order, for \$3.00 (\$4.00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year:

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It is understood that this subscription makes me eligible to enter your \$1000.00 Amateur Movie Contest.



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Cinematographer Contributor to Conduct Cinema Course

HARRY Alan Potamkin, a contributor to The American Cinematographer, former foreign correspondent for National Board of Review, now member of Exceptional Photoplays Committee, National Board of Review, and correspondent for Close Up and other European film-journals, has been chosen to conduct a course on the cinema at the New School for Social Research, New York, this fall, beginning October. Although previously the New School has had lectures on the film by Gilbert Seldes, Ralph Pearson, Alexander Bakshy and Terry Ramsaye, and a course was planned by Robert Milton, the director, before he left for Hollywood, Mr. Potamkin's course will be a pioneer in this country in the consideration of the cinema on par with the other arts and sciences. It will treat the film's prenatal days, its early history, birth in the laboratory and rearing in the counting-house, showmanship and international competition, the primitive film and basic principles, the progress of the motion picture as art, the social and political network in regard to the film, the various national cinemas (French, Swedish, American, German, Russian, Japanese, etc.), the development of the 'compound cinema' of sound, color, variable screen, stereoscopy, etc., censorship. Special lectures will consider pivotal films, films of major importance in the movie's history, and the categories of the film of humor and animation. Two of the lectures will be devoted to a critical presentation of a major silent and major sound film. The progress of cinematography and the role of the camera will be examined. Film-excerpts and representative speakers will accompany Mr. Potamkin's lectures, as will also other accessories. Entirely new data will be furnished the cinema student for his examination, and a bibliography of cinema literature will be suggested. The aim of the course is to establish correct historical criteria for the cinema, but the seriousness, Mr. Potamkin promises, will in no way oppress the pleasures of instruction.

Stolen From Universal

THE following pieces of equipment have been stolen from Universal Studios, according to Charles Glouner, head of the camera department. Anyone locating these articles are requested to get in touch with Mr. Glouner. They are: a 4 x 5 Eastman Graflex camera, No. 173715, with Kodak Anastigmat lens, No. 338599. Also two 1000-foot film magazines Nos. 361 and 385, containing 1955 feet of raw negative stock.

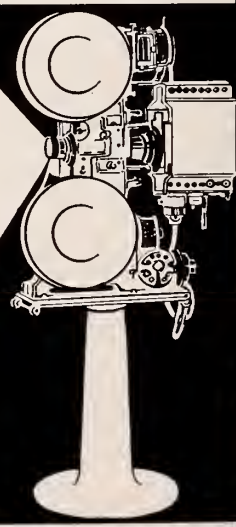
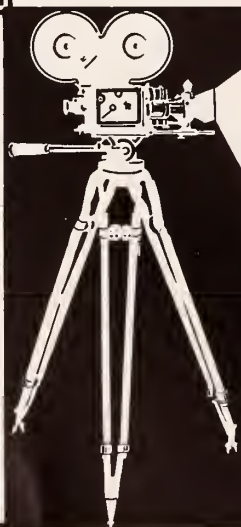
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Eastman Absorbs Tax

THE Eastman Kodak Company has announced its decision to absorb the 10 per cent tax on the sale of cameras fixed by the new revenue law. The company will pay the tax on all Eastman cameras sold but will not bill its dealers for the amount of the tax. Eastman camera prices will therefore not be increased to the dealers or to the public.

An officer of the company made the following statement in explaining the tax decision: "Last winter the Kodak Company announced that in the film sizes that are in almost universal use there was the equivalent of a 25 per cent reduction in price brought about by furnishing an eight-exposure roll at the former price of a six. This was a step in the line of keeping one of the most delightful of pastimes on an economical basis where everybody could enjoy it.

"Now comes similar action along the same line. The Government has placed a 10 per cent tax on cameras, along with the tax on the other goods used on outings. But as 'all outdoors invites your Kodak,' the company is not going to have anything interfere with that invitation. It is going to absorb that tax. There will be no increase in price to the customer."



Rodent Robbers Are Villains in New 2-Reel Motion Picture

THE prairie dog and his cousin the ground squirrel are featured in a 2-reel motion picture just released by the U. S. Department of Agriculture. These "cute little fellows," which scamper to cover in their underground burrows on the approach of visitors and then, curiosity overcoming fear, poke their heads over the edge and play hide and seek with the strangers, are shorn of their cloak of harmlessness and shown up for what they are, the rodent robbers, in the film "Routing Rodent Robbers."



Camera Movement

(Continued from Page 14)

The introductory analysis shows the great variety of possible technical use and effects of camera movement. The following short study shows part of their dramatic possibilities and also the dangers of their promiscuous application without careful study of their effects upon the public.

Camera movements have inherent and potentially great dynamic powers for the improvement of motion picture effects in the hands of a careful man, but may become dynamite in the hands of the careless. Such carelessness is usually of a two-fold character. First, the temptation of using novel effects often prompts the director to over-do their use in one picture, or in one scene. Such over-use can be called psychological carelessness. Practice so far has shown that a few well executed short camera movements are more effective than a number of them, especially when of long duration and not well conceived for dramatic climax.

Secondly, it is carelessness in its worst type if the director does not painstakingly discuss an intended camera movement with the cameraman who is not simply controlling the mechanics of the moving camera, but has to study the possibilities of set construction, its contrasts and the relative photographic values of set and costume designs and colors under changing camera-angles, following each other during a camera movement. They all influence lighting, which is, even without camera movement, a delicate art; and it certainly takes a master in lighting to maintain the desired mood and photographic excellency for camera movements as now achieved for the fixed camera work. It is the cameraman who should be consulted before a camera movement is decided upon, because it is only he who can give sparingly used camera movements their pictorial and dramatic value which makes them an appeal to mass psychology.

Combining Leica and Eyemo



CLIFF THOMAS, President of the Hollywood Camera Exchange, has devised a unique method for making both moving pictures and still pictures with one set-up. Mr. Thomas wanted to have a one-man outfit for use in making both stills and movies of the various events at the Olympic Games, so he just clamped his new Model D Leica to his Bell & Howell Eyemo 71 C, which is equipped with a 400-foot magazine, motor and battery box. With twenty feet of cable connected to the battery box, the operator has plenty of freedom in moving about; and at the same time he is able to secure stills while making his movies. All he has to do is press the button starting the motor of the Eyemo, then he snaps his stills while the Eyemo is doing its stuff. A number of Hollywood camera enthusiasts have had the Hollywood Camera Exchange provide them with the same equipment.



Bausch & Lomb Executive Selected for M. I. T. Board

Herbert Eisenhart, vice-president and general manager of the Bausch & Lomb Optical Company of Rochester has just been elected to a five year term on the board of the Massachusetts Institute of Technology. Mr. Eisenhart graduated from M. I. T. in 1907, previously having received the degree of B. S. in Princeton in 1905. A native of York, Pa., he came to Rochester in 1907 to accept a position in the chemical laboratory of the Eastman Kodak Company. He became assistant superintendent and then superintendent of this division.

In 1917 Mr. Eisenhart became associated with the Bausch & Lomb Optical Company as production manager. In 1926 he was elected assistant general manager and in 1929 vice-president and general manager.

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Developer Formulæ

MANY requests have been received from readers for developer formulæ for both negative and positive stock. The following information should be of considerable value to those readers. Herewith are two developers for negative stock and two for positive stock, as given by the two largest film manufacturers in America. These are given in their metric form, with the following simple rule for conversion U. S. pounds and gallons:—Using 120 (U. S.) gallons of water, just substitute pounds for grams in the chemicals used. If you use only 7½ (U. S.) gallons of water, substitute ounces for grams in the chemicals.

Negative Developer

No. 1

Elon (Metol)	1.5 grams
Sodium Sulphite	100.0 grams
Hydroquinone	4.0 grams
Borax	1.5 grams
Water	1.0 liter
Temperature	65° F. or 18.3° C.

No. 2

Metol (Elon)	2.5 grams
Sodium Sulphite	75.0 grams
Borax	5.0 grams
Water	1.0 liter
Temperature	66° F. or 18.9° C.

Positive Developer

No. 1

Elon (Metol)5 grams
Sodium Sulphite	30.0 grams
Hydroquinone	3.3 grams
Sodium Carbonate	20.0 grams
Potassium Bromide	1.5 grams
Water	1.0 liter
Temperature	65° F. or 18.3° C.

No. 2

Metol (Elon)	7.5 grams
Sodium Sulphite	24.0 grams
Hydroquinone	3.21 grams
Sodium Carbonate	21.0 grams
Potassium Bromide	0.5 grams
Water	1.0 liter
Temperature	68° F. or 20° C.



Using 16 MM. Negative Film

(Continued from Page 33)

photographed on 16 mm. negative and reversal films by William Stull, A.S.C., the Associate Editor of the magazine. In these tests Mr. Stull used almost the complete range of professional filters—including many far heavier than even the advanced amateur would ever use—and in no case was the granularity objectionable. But he has confided to me that his first experiments with this type of film—before he had proved to himself that a slight underexposure was vital to success—were unpleasantly grainy, whether or not a filter was used. And I cannot better sum up the matter than did Mr. Stull when I asked his advice preparatory to my own first attempts with 16 mm. negative: "Handle it just as you would any other 16 mm. film of corresponding sensitivity—be extremely careful when loading or unloading, for the opaque film leader is not so sure a preventive of edge-fog as is the customary black paper—keep your exposures well down—and you'll be all right." I did—and with such success that from now on—I'm using negative for my 16 mm. work."

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Independent Grocers Go In For Talkies

AN INDUSTRIAL talkie has just been produced for the Independent Grocers Alliance of America by the Burton Holmes Studios, Chicago. The talkie consists of three related pictures and totals approximately 14 reels. It will be shown to wholesale and retail grocers and manufacturers to the number of more than 25,000 in 47 conventions across the country. A Bell & Howell Varo lens was used for zoom shots—the first time in industrial work.



A Burton Holmes crew photographing grocery store interior

The Varo lens is said to be particularly valuable for quickly establishing locale, background, etc., and then emphasizing certain parts of the vocal dialog. It permits zooming up to a character speaking his lines and concentrating attention on the important action of the scene. When the speaker's verbal point has been established in a close-up, zooming back without interruption to the original scene reestablishes the background. The lens affords a tremendous saving in film footage, as well as effecting a smooth transition from one scene to another. This transition feature is particularly important when shots are being made from points where it would be impossible to obtain the effect of approaching or zooming up to the subject by any other means.

New Film on Mechanical Drawing

THE first educational motion picture made expressly to teach Mechanical Drawing was recently produced in San Diego, California, by Floyd W. Cocking of the Roosevelt Junior High School, as author, and James E. House of the Visual Education Department of that city, as director. It is a 16 mm. of 480 feet, or about 20 minutes running time.

Here is an excellent example of truly educational film made by educators themselves, with nothing more elaborate in the way of equipment than a Filmo Camera and a regular drawing outfit.

The film gives brief correlation of drafting to industry and then takes up the study of drafting by means of photographed demonstrations showing the use of instruments, drafting technique, layout of a plate, choice of views in drafting, and the actual construction of typical drawings.

During a recent review of this film in the Bureau of Visual Instruction of the Chicago Public Schools, the opportunity was presented to test the reaction not only of the instructors present, but also of several junior high school boys. From the comments of the boys while the film was being shown, it was evident that even in such a short and condensed presentation, knowledge was acquired in a most interesting and effective way. The method of sharpening the pencil, the determining of the location of a line to be drawn by placing the pencil point and then bringing the angle ruler up against it, and similar points, were vividly described by the boys after the film had been shown.

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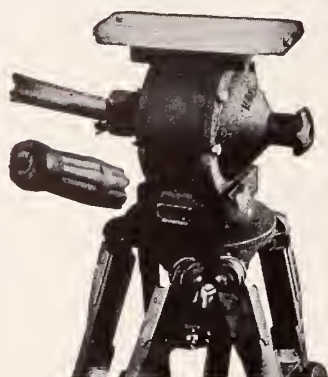
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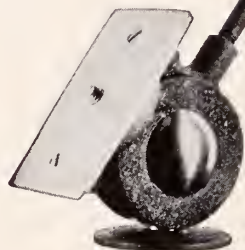
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Amateur Movie Making

(Continued from Page 30)

table, and then quickly and accurately assemble them on a reel. When I am cutting a scenic film, I frequently carry this idea one step farther, and take the scenes which have no definite place in the continuity and assemble them together in a utility reel; then, when I find that for some reason or other I need a scene or two to round out the continuity, or to space titles, or anything of the sort, I have this utility reel of surplus footage at hand, ready to project, thereby simplifying matters considerably.

Once the scenes have been roughly assembled, the picture should again be projected. This time, study it to see what can be eliminated, and what added. Study it for tempo; see if you can aid the tempo by further cutting. Cutting, by the way, is one of the most important factors in determining the tempo of a completed picture. Short scenes, with frequent cuts, accelerate the tempo; long scenes, with few cuts, slow it down.

Lastly, project the film again, and look for detail, mechanical imperfections—bad frames, poor splices, etc. Eliminate these—and your picture should be complete.

Above all, remember that it is in the editing that the final touches of originality can be shown. Study the professional productions of such artists as Rouben Mamoulian, Lewis Milestone, Ernst Lubitsch, Rene Clair, Sergei Eisenstein, and Fritz Lang. All of these men are artists of the highest order; they almost invariably provide an abundance of original touches in direction, cinematic treatment, and photography; but most individual of all is their arrangement—or editing—of the completed picture. Each of them personally supervise the editing of their pictures, realizing that commonplace editing can obliterate all of the individuality they have striven to build up in the previous phases of production. Therefore, if you have worked hard to make the photography, direction and general production of your picture outstanding and original, do not forget that the picture must be edited sympathetically, carrying out the same treatment from start to finish. No picture can be more original than the mind of its editor.

New Leica Shop in Hollywood

GILBERT Morgan has just opened a Leica department in the Sunset Camera Shop, 6305 Sunset Boulevard, Hollywood, where he has on display a complete line of the latest Leica cameras and accessories. In addition to handling cameras, lenses and equipment, Mr. Morgan is prepared to supply Leica owners with any amount of 35 mm. film in short end lengths. As some Leica owners have had difficulty in securing this film in the required lengths, Mr. Morgan's service should be of considerable value. Mr. Morgan also is specializing in fine grain developing and finishing of film.

For the past year Mr. Morgan has been associated with the E. Leitz Company, both in Hollywood and New York, giving lecture demonstrations and working in the research department.

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AMATEUR Club Activities

Greenbrier Amateur Movie Club

MEMBERS of the Greenbrier Amateur Movie Club, of White Sulphur Springs, West Virginia, are eagerly awaiting reports from England where their latest production, "Black Door," is now being screened for the British amateur enthusiasts. All who have seen this picture in America have praised it highly, declaring it to be one of the best examples of amateur club pictures yet produced. Hal Morey directed and photographed the picture. In the cast were Lucille Dixon, Catherine Preston, J. M. Gaston, R. H. Patterson, Herman Rieger, L. R. Johnston, George O'Brien, W. B. Hines, Captain V. Yavorsky, William Perry and Robert Parker. The Greenrier club is entering a picture in the AMERICAN CINEMATOGRAPHER Amateur Movie Making Contest, and while the decision has not been made, it is expected that this picture will be the one entered.

Milwaukee Movie Makers

ANOTHER club that is working on a picture to enter in the Amateur Movie Making Contest of the CINEMATOGRAPHER is the Milwaukee Movie Makers, of Milwaukee, Wis. This organization is making a yachting picture which is titled, "Yo-Ho," and latest reports are to the effect that much progress has been made and that there are some exceptional scenes in it.

Los Angeles Amateur Club

BILLY Burke of the Billy Burke Home Movie Studio, Los Angeles, was host to the Los Angeles Amateur Cine Club at this organization's July meeting, held at the Bell & Howell Auditorium on July 11th. An unusually fine meeting resulted. Mr. Burke had the cooperation of a group of Los Angeles and Hollywood dealers consisting of the following: Phil Meisenzahl, Bob Robinson, Bill Winters, Al Kerkhoff, George Sherlock, Ray Sebastian, Hatto Tappenbeck, Roland King and P. Iwata. These dealers provided a reel each of interest film for the evening showing.

Bergen County Cine Club

A GROUP of fifteen home movie enthusiasts, of Englewood, New Jersey, have formed the Bergen County Cine Club. Leaders of several amateur clubs located in Northern New Jersey attended the organization meeting and gave valuable advice. Oscar C. Bucheister, President of the Cine Craft Laboratories, 158 South Van Brunt Street, Englewood, offered the club the use of his firm's projection theatre for a meeting place which the new club gladly accepted.

The Elements of Makeup

(Continued from Page 35)

ference in color-sensitivity affects the makeup exactly as though it were an increase in speed. Therefore, when using Ortho film the basic makeup should be a No. 28. It is really hardly worth while to use Ortho, however, when the regular Panchromatic film is so cheap; besides, the full beauty of an exterior scene is lost if you do not have a panchromatic emulsion which will portray the color-contrasts of costumes, foliage, etc. —to say nothing of cloud-effects—in their true relationship.

(EDITOR'S NOTE: In the following articles Mr. Barker will discuss in detail the application of makeups, describing and illustrating the various stages.)

Announce 1932 Academy Awards Program

CHAIRMAN David O. Selznick of the Academy's 1932 Committee on Awards recently announced the complete program for the selection of the Academy's annual awards for achievement in the various phases of motion picture production. Several notable changes are noticeable in this year's program, especially in the technical awards. The most noteworthy change is an improved method of making nominations for the technical awards, the nominations being made by the various sub-sections of the technicians branch whose members are experts in the especial phase of production for which the award is made. For example, nominations for the Cinematography Award will not, as in the past, be made by the entire technicians' branch, which is composed of Art Directors and Sound Men as well as of Cinematographers, but by the Photographic Section alone.

A further improvement is noticeable in the restrictions seeking to limit the photographic award to bona fide examples of commercial production. The rules governing this year's Cinematography Award specifically state that "Only black-and-white pictures photographed in America under normal production conditions shall be eligible for the Cinematography Award; others may be eligible for Special Awards." These restrictions, together with the new method of making nominations and the fact that all nominating and voting is by secret ballot, promise even greater impartiality and fairness for this year's awards than in the past.

As has been the custom in the past, the awards will be announced and bestowed at a special Awards Banquet, which will be held November 10.

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Kodacolor for Victor Cameras and Projectors

THE Victor Animatograph Corporation announces that Kodacolor is now available for all Victor Cameras and Projectors.

Kodacolor equipment for the Model 3 and Model 5 Victor Camera consists of the Hugo Meyer F 1.5 1" Kino Plasmalens equipped with the Kodacolor Filter Assembly. The Victor Corporation advises that Hugo Meyer F 1.5 Kino Plasmalens now in use by Victor owners should be returned to the factory for fitting of the Kodacolor Assembly to obtain the best results. The new type of Kino Plasmalens now being supplied by Hugo Meyer is fitted with a special Kodacolor Filter Assembly at any time desired without special factory fitting.

The Hugo Meyer Kino Plasmalens is said to be one of the finest lens equipments available for natural color photography, due to the fact that its elements are highly corrected for all of the primary colors of the spectrum. The lens can, of course, be used also for black and white photography. On interior work and scenes made in poor light, deep shadows, etc., the speed of F 1.5 offers a tremendous advantage, as this speed is more than 60 percent greater than that of the F 1.9 lens generally employed for Kodacolor.

Kodacolor equipment for the Victor Projector will consist of a special lens equipped with the Kodacolor Projection Filter Assembly. The lens because of its special construction for color projection is not intended to replace the regular Victor lens supplied for black and white projection.

Kodacolor Assemblies for both Victor Cameras and Victor Projectors will be available through all authorized Victor distributors and through the Victor factory at Davenport.



Cinematographers and Directors Meet

(Continued from Page 10)

Director James Whale then explained that he thought that the only time a trucking shot should be used is when it increases the value of the picture; but he added, "I realize that these cameramen are masters of their art, and I always consult with my cameraman before deciding on any shot. If he objects and shows me that I am wrong I hastily take his opinion and follow his advice."

All in all the meeting and discussion served an excellent purpose, for it at least, started discussion and thought and promoted a greater feeling of cooperation between the cameramen and the directors. No doubt, out of this meeting will grow a more intelligent use of these moving shots, and it is hoped a betterment of motion picture photography.

Following the discussion Karl Freund's "Berlin" and the UFA production, "Congress Dances" were shown.

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EASTMAN FILMS

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WARNER-FIRST NATIONAL STARTS BIG PUSH

RUMORS and counter-rumors notwithstanding, there's plenty of activity in the great nest that forms the base of Dark Canyon in Burbank. Warners have made a welcome move. Production is under way for a busy season. Carpenters, painters, electricians, actors, directors AND cameramen are hearing the long-awaited buzz of their phones calling them back to their work. An ambitious program started this week, when Sol Polito was called to make tests of Paul Muni, who will star in "I'm a Fugitive." They start to "roll 'em" on Saturday morning.

Jimmy Van Trees gets the second call for the Al Green production, "Silver Dollar," which starts shooting the first of the week.

"Bun" Haskins is shooting atmosphere stuff in New York for "Central Park," which is Number Three on the Warner schedule.

Two more set to go before the fifteenth of the month, and from that time forward the old Brulatour trucks will be unloading at Milton Cohen's front door, and—who says "There ain't no Santa Claus!"

Olympic Luncheon—

Russia won first honors, (the check), in the Olympic Classics of Lab superintendents when Mike Leshing, (Fox), tendered a luncheon to his fellow craftsmen at Cafe de Paris (Movietone City) last week, for no other good reason than to tell a brand new story about the traveling man and the farmer's daughter. The color scheme was in keeping with the Olympic motif, (red, white and blue)—red were the roses in the gigantic table centerpiece—white (as the snow) was the gleaming linen—and blue (of course, you dope) were the other lab superintendents when they thought of the social obligation of following Mike's act. Those who went indigo—John Nickolaus (M. G. M.), George Seid, (Columbia), Roy Hunter (Universal), Harry Ensign (Paramount), Charlie Levin (Roach), Jack Guerin (Consolidated), Henry Goldfarb (Fox), Eddie Hansen (Fox sound), Emery Huse (Eastman), George Gibson (Brulatur) and Ye Ed, who right here and now pledges the next host twice this space if he tops Mike's menu. (Note—To the chef of Cafe de Paris—Saluti!).

Congratulating Cronjager!

Another plum in the pie of Eddie Cronjager. Just this minute got the assignment as number one boy on the William Wellman (RKO) production co-starring Richard Dix and lovely Ann Harding—"The Conquerors." Associated with Mr. Cronjager on this big feature is Bob DeGrasse, (who won the newspaper raves on the British picture made by Rowland V. Lee, "The Sign of Four")—Bob has the second berth, while George Diskant is the assistant. Cronjager has turned in an enviable record this year and richly deserves this splendid assignment.

"Bring 'Em Back Alive"

No good cameraman ever dies in the memory of Hollywood producers. Proof? —Plenty! —Bert Glennan stepped away from his camera and took up (with emphatic success) the megaphone a few years ago. Now he's dropped the mouth-piece and taken his turn with the lights again, and you'll find he has kept right on his pictorial toes when you see the newest Josef Von Sternberg production, "Blonde Venus," with la Dietrich. Bert's second is Fred Mayer; Neil Beckner, assistant.

Milner With Lubitsch—

With the final scenes in the can on Chevalier-Paramount production, "Love Me Tonight," Vic Milner got all set to show the boys from other ports just what a Hollywood sailor in action looks like—his li'l ole boat tuned up and ready to go, when—Bingo!—one more entrant out of the Olympics!—Reason why—because that wise showman, Ernst Lubitsch, gave Vic the wiggle of the finger and pulled him out of the cock pit back to the set, where they are now readying to start the new important opus. Vic's seconds are Bill Rand and Bill Mellor, and his assistants, Guy Roe and Lucien Ballard.

Dave Able Returns

Back from his vacation in Montreal, Dave Abel is supervising the photography of the George M. Cohan picture, "The Phantom President," at Paramount. His second is Ernest Lazzlo, and assistant, Jimmy King.

Kurrle's Vacation Cancelled

Bob Kurrle was the recipient of an unusual "cut." His vacation from Warner-First National promised him play time to about the middle of August. Along came William Siström (World Wide) and changed Bob's mind and schedule. "Lucky" Humberstone is directing "The Crooked Circle," and Bob is directing the lighting, while "Red" Greene and Johnny Shepek are doing the hard work.

Art Miller Finishing

Artie Miller is winding up photography at Universal on "O. K., U. S. A.," and is standing by for an assignment which has been extended by another major studio.

Lang on "Farewell"

Charlie Lang just can't get a day off. Paramount KNOWS the boy's good. A solid year of keeping busy at ONE studio in these times speaks volumes for any cameraman. Lang drew the assignment for the special "Farewell to Arms," which will be directed by Frank Borzage. Bob Pittack and Cliff Shirpsper are Lang's associates.

Hello, Broadway

George Folsay just got his lungs nicely filled with our low fog, (after yeahs and yeahs of Noo Yawk), and started his first coast Paramount picture, "The Big Broadcaster," only to be told that the picture will be finished in New York. George is packing his trunk and washing the faces of Guy Bennett, his second, and Tommy Morris, his assistant, to take them all bye-bye to Broadway.

Marsh for Marion Davies

Ollie Marsh just completed his camera work on "Father and Son" for M. G. M., and was immediately reassigned to "Blondie of the Follies," with Marion Davies, when George Barnes who was taken seriously ill had to withdraw. Barnes is threatened with pneumonia. We add our hope to that of all other friends that George will beat the threat and shortly be able to resume work.

Garmes—"Smilin' Through"

Lee Garmes, who won the critics' praise for his artistry in Norma Shearer's triumph, "Strange Interlude," now at Grauman's Chinese, is in production with the same star at M. G. M. on "Smilin' Through," which is being directed by Sidney Franklin. Les White and Slim Cruze are assisting Garmes.

Hickox at Radio

Sid Hickox is photographing "Bill of Divorcement" at Arkayo. His staff for the production is Eddie Pyle on second and Wesley Anderson and Charles Burke as assistants.

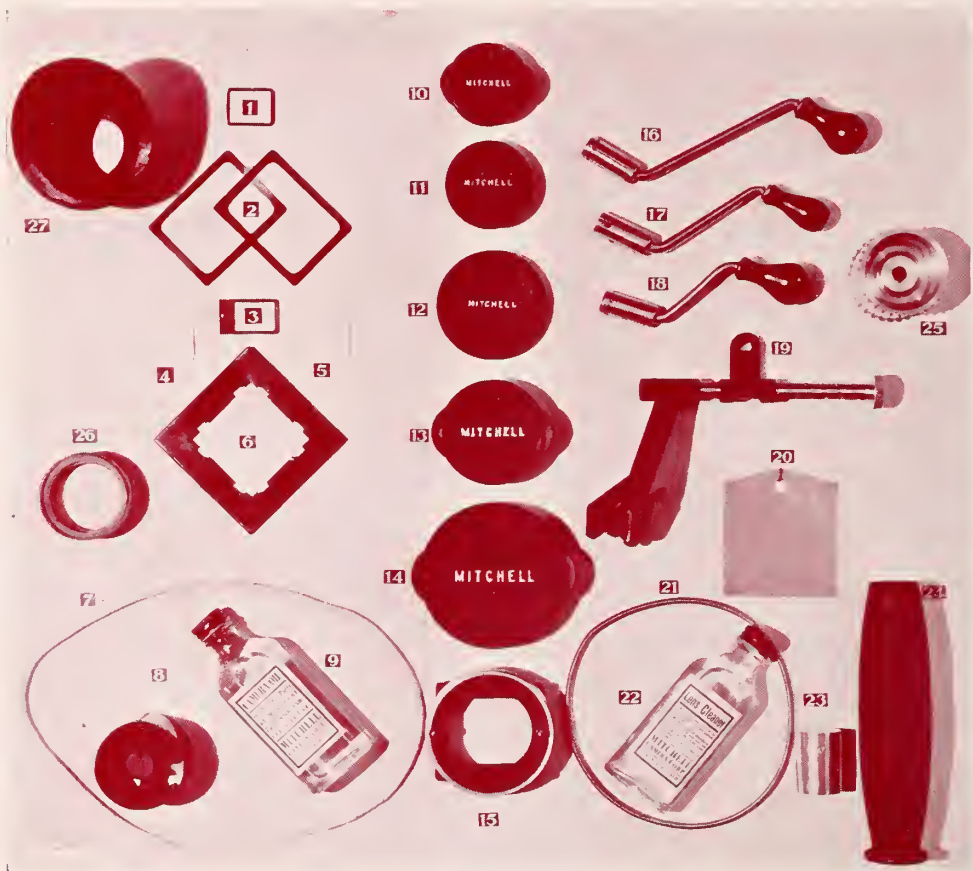
Lyons Finishing

Chet Lyons is winding up the photography of "Decency" for Equitable. Ray Ramsay is his second; John Van Wormser, assistant.

The Editor Squawks

Add dirty tricks. Jimmy Howe took us to Chinatown to a fascinating little dump where he selected the most delectable dishes from a menu printed in zig-zag Chinese. What food—gobs of it. —Then came the check—(in good old Los Angeles-American English). Jimmy simply couldn't read THAT. (Whisper—I've a date to take Jimmy to a corned - beef - and - cabbage place owned by Mickey O'Toole—where the only waiter happens to be a China boy —Heh—heh—heh—!)

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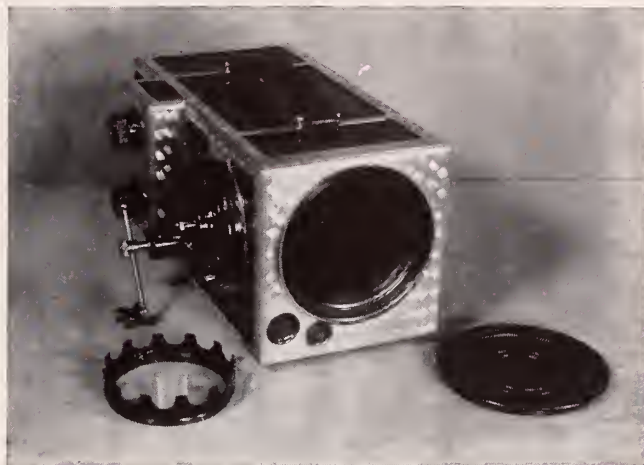
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A view of the Varo lens showing general construction

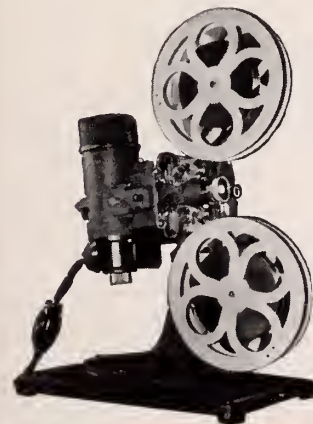
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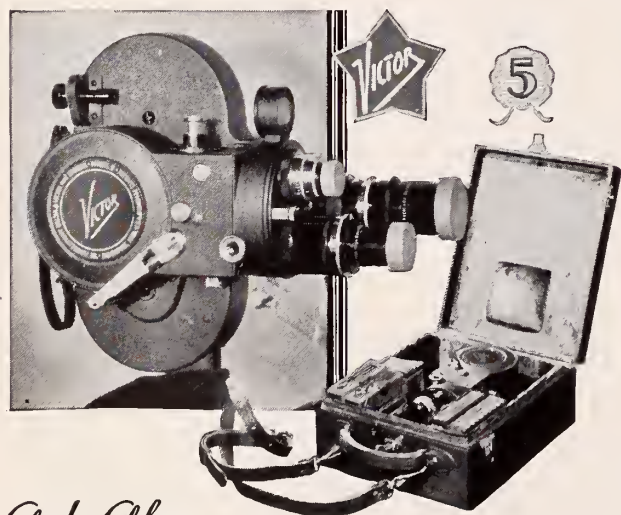
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Volume XIII

SEPTEMBER, 1932

Number 5

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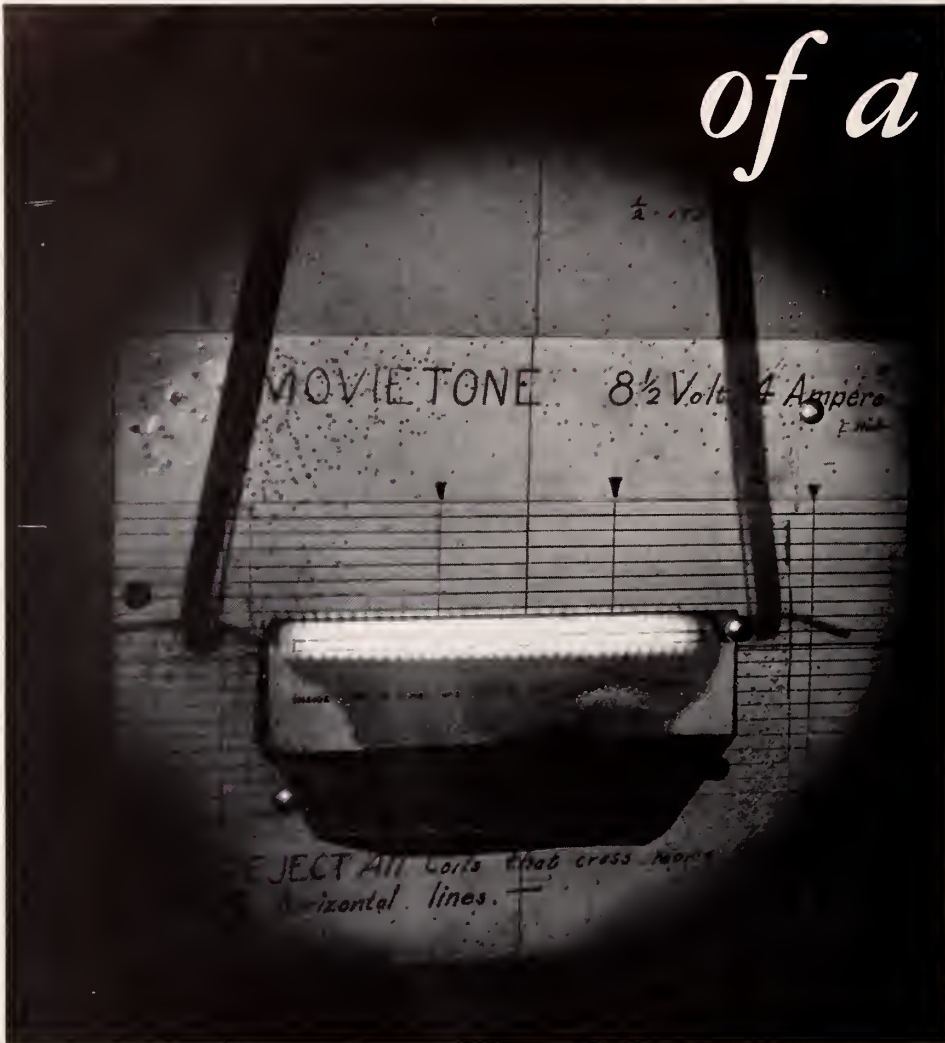
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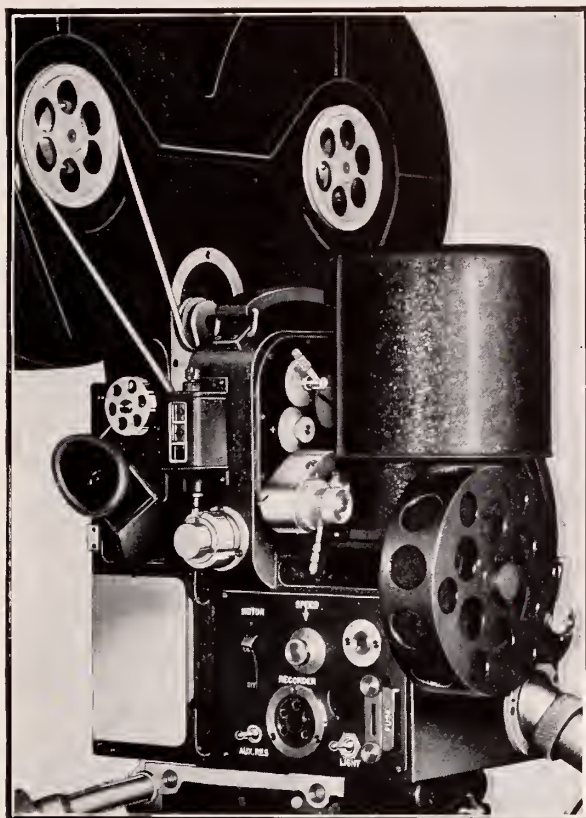
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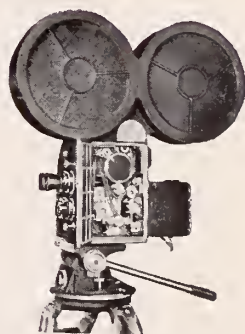
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by **ERNEST BACHRACH**

Head of Still Department, R-K-O Studio.

PORTRAIT photographers outside of the motion picture industry have for many years recognized the fact that a successful portrait is not merely a matter-of-fact photographic record of a person's face, but rather a primarily pictorial representation of that person's personality, made by means of photography. This school of thought has gained for photography a place among the recognized arts, and produced, in men like Edward Steichen, Nicholas Muray, Pirie MacDonald, Nicholas Haz, and their fellows, a group of unsurpassed artists.

In the modern picture industry, on the other hand, the emphasis has generally been on the more straightforward, commercial-record type of portrait. From all viewpoints, this is deplorable, and, to my mind, unnecessary. In the first place, the motion picture industry, from its very nature, demands portraits of the highest type—portraits which show not merely the appearance of the subject, but also the subject's personality. For this industry is essentially the sale of its stellar personalities to the public, not alone through the medium of the films exhibited in the theatres, but also by means of the portraits published in the myriad magazines and newspapers throughout the world. In the second place, the men who preside over the various portrait galleries maintained by the studios are, individually and collectively, portrait artists second to none—capable of producing far better work than the too-frequently indifferent sort of portraits that they are usually called upon to turn out. Letting such ability go virtually to waste is gross extravagance.

It must be admitted, of course, that the studio portrait photographer works under certain inherent limitations which do not, as a rule, apply to the independent portraitist. In the first place, all of his work is definitely intended for magazine and newspaper reproduction. In the second place, he must work on a volume-production basis unknown elsewhere, and under drastic time-limitations.

I have found, however, through experience, that neither of these inherent limitations is sufficient to restrict the determined worker.

Admittedly, the fact that studio portraits are intended primarily for publicity purposes—for reproduction in newspapers and magazines—is a problem. To my mind, however, the magnitude of this problem is greatly exaggerated. The photo-engraving and rotogravure processes have in recent years made tremendous strides; it is now possible to get very satisfactory results even when relatively coarse screens and ordinary papers are used—provided a reasonable amount of skill and care are exercised in the engraving and printing processes. Furthermore, I have observed that the journals taking such care in the making and printing of their reproductions are almost invariably the ones which publicity men regard as the most valuable publicity media; and this is by no means restricted to the "class" publications. I have further observed that, the better the portrait, the better the position accorded to it by the editors; in a majority of instances, both magazines and newspapers maintain special sections or, in some cases, special editions—with superior reproduction, make-



The strong lighting in this portrait of Gwili Andre reveals her dramatic possibilities.



The lighting of this portrait of Dolores del Rio makes the simple composition interesting.

up and copy—for the most desirable art. Lastly, I have also observed that, the better the picture—the more original and distinctive it is—the more favorable is its response from the editors.

This last is logical enough: for regardless of whether the acceptance and placing of photographs is handled by a trained art-editor or by an editor who, like many laymen, feels that he "may know nothing about art, but does know what he likes"—or what the public likes—he is almost certain to have sufficient journalistic acumen to realize that, the more he avoids the commonplace, the more attractive will his issue be. And if he fills his pages with commonplace, run-of-the-mill pictures, he cannot escape a commonplace, run-of-the-mill-looking magazine.

In so far as the mass-production factor is concerned, it really need not limit the photographer seriously. Quite the reverse! In almost anything, if one is able to work too deliberately, his work suffers. A director, for instance, will under such circumstances, often tend to become too "clever," a writer, too verbose; an actor, too "actorish;" and a photographer too "arty." In my own case, I have found that if I have the time to play with my portraits, they lose their spontaneity; the poses become too studied, the lightings, too "tricky." On the other hand, of course, excessive pressure must inevitably result in the slighting of many details—the stifling of the creative spark. But a happy medium is entirely possible.

But perhaps the best presentation of my theories would be a brief description of my methods of working. In this connection, let me apologize for the rather excessive use of the personal pronoun; after all, it seems in this instance an inescapable evil, for such an article as this is can only be a presentation of one man's personal opinions and experiences. I would err irreparably if I were to set forth my own views as anything else. No individual can lay down general laws in a personal discussion of an artistic problem.

The first consideration, of course, must naturally be the

nature of the portrait in question; whether it is to be an advance-study of some specific characterization to be used in a production, or purely a portrait to keep the player and his personality before the public. In the former case, of course, I must know, naturally, something of the part itself and of the player's conception thereof. Then it becomes a relatively simple matter to determine the treatment that will best serve our purpose.

In the more frequent instances, of course, where the portrait is intended to be simply a portrait, the problem is at times more difficult. If the player is one who has been under contract to the studio for some time, I am at once working both at an advantage and at a disadvantage; I know the player, having made perhaps hundreds of other pictures of him before—but I must carefully avoid duplicating the many previous portraits I have already made of him. If the player is a newcomer to the studio—and especially if he (or she) is new to pictures, I must take great care to have my portraits coincide with the personality that the studio—through casting, makeup and costuming—hopes to build up for their new luminary. I must make my camera see the newcomer's personality as the public will discover it on the screen, many months hence. It would not do at all for me to make these first portraits of a newcomer as, for instance, a sweet young ingenue, when the parts selected for her first appearance were to present her as a sophisticated woman of the world.

As a rule, I have found it highly advantageous to know my sitters relatively well. It is a common misconception that screen stars are inevitably easy subjects for the portrait artist. Such is not by any means the case. Even in their daily work on the set, some stars are uncomfortably camera-conscious; and even the ones who are least so on the set often become painfully self-conscious and camera-shy in the portrait gallery. A classic example, of course, was recently cited by Edward Steichen, in an article in a national magazine, when he stated

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Notwithstanding the delicate gradations, this portrait of Gwili Andre reproduces perfectly.



The simple, virile lighting of this portrait perfectly expresses the character of Richard Dix.

UFA

by ROBERT M. LOW

WHEN we think of the German Cinema, our thoughts almost involuntarily shape themselves into the three letters U F A. For the initials of the Universum Film Aktiengesellschaft represent more than the mere name of a firm: they stand for the Film Industry of a great country. True, there are in Germany other production firms than Ufa; but in the truest sense of the word, Ufa is the German Film Industry, and the German Film Industry is Ufa.

Undoubtedly the most marked of the many differences between the German Film Industry and its American contemporary is the tremendous esprit de corps prevailing throughout the former. Everyone connected with the business is proud of his connection. More than that, he is proud of his company. Everyone is working whole-heartedly for the good of the company; studio politics are unknown. The work itself is the important thing; not the pay-check (which is, by the way, much smaller than it would be for a corresponding position in this country.)

When a production is finally completed, and opens at some theatre in Berlin, every member of the company is present at the premiere, rejoicing at the fact that he himself has had some part in making the picture. If the picture is a hit, everyone concerned feels a glow of pride, not alone because he helped make the picture, but because it is a success for his studio. This company pride is not by any means confined to the executives and those few fortunate ones who, like the director, cameraman and star, find their names in electric lights in front of the theatre, but spreads throughout the entire studio force.

Much of this may undoubtedly be attributed to the different conception of the cinema in the minds of all German film workers; it is not a get-rich quick "game" or a "racket"; it is an art. As such, it dignifies everyone connected with it. It demands the utmost in application and intelligence; in it, accomplishment is enormously worth while for its own sake.

In consequence, working conditions in the German Film Industry are far better than they are here. Of course, the studios are not as luxurious, nor are the resources so great. I remember, for instance, that we used to go on a strike regularly once a week in protest at what the studio cafe used to serve us as food. Neither quarters nor salaries are so large as they are here; but the real essential—the atmosphere of the industry—is far more conducive to creative work. One does not have to keep one eye constantly open, one hand constantly on guard, against figurative back-stabbing. Competition is keen—but it is based on actual merit rather than studio politics. **You know that if you have a job it is because you are the best man for the place; you are not there merely because you are somebody's friend.**

Production schedules are decidedly longer than they are here. There is no frantic, heartbreaking driving to meet an impossibly close release-date. (This despite a serious shortage of pictures.)

In Germany, the preparation of a picture is decidedly more important than it is here. The story is carefully chosen, and once it is chosen, its preparation is by far a more cooperative affair than would be the case here. It is not merely a matter for the writers and the producer, but for the director and cinematographer as well; in some instances, the recordist and the musical-director are also consulted. In my own experience, working on the English version of "Congress Dances," those of us who were assisting in the production of the English and French versions also aided the preparations, and participated in the many conferences between Producer Erich Pommer, Director Edik Charell, Cinematographer Karl Hoffmann,

Recordist Fritz Thiery, and the writers, Norman Falk, Robert Liebmann and Robert Leigh. Richard Heyman, the composer of the music, naturally participated in many of these conferences, as did the Art Directors, Robert Herlth and Walther Rohrig, the Costumer, Ernst Stern, and Carl Winston (now here with Paramount), Mr. Pommer's assistant. But the brunt of the preparatory work was done by Pommer, Charell, and Hoffmann.

Let me here pay tribute to that superb genius, Erich Pommer. He is, literally, Ufa. He is the guiding spirit of the studio; a man with whom it is an inspiration to work. He is an entirely different type of executive from the average supervisor found in this country; the type which some of our executives over here might be if they were not burdened with the impossible task of doing the work of three or four men in guiding the enormous production of a big studio. Pommer is an executive who intimately understands the work of every man under him. He knows writing, direction, cinematography, cutting, and every phase of production from personal experience. **He aids his subordinates rather than hinders them.** But his record as a producer can speak far more eloquently than anything else: literally every great German picture for the last fourteen years has been an Erich Pommer production—From "The Cabinet of Dr. Caligari" to "Congress Dances."

Pommer's intimate knowledge of all phases of production is not, however, unique. Everyone occupying an important position with Ufa is expected to know both his business—and the other fellow's. Directors, writers and cinematographers especially are required to be familiar with all of the technical and artistic phases of the work. In Germany there are no "Directors" suddenly transplanted from the cloak-and-suit business; no writers called in from the newspapers. If you are to work in the creative side of German pictures, you must know ever detail of both the Art and Technique of your medium. You do not attain your position overnight—but when you do, you really know your business. In my own case, for instance, before I was allowed to serve even as an assistant in the direction of pictures, I was given the opportunity to study every phase of the business; I worked in the laboratory, the camera department, the sound department, and the cutting-room just as a student goes through a prescribed course before receiving a college degree.

In Germany, too, the Cinematographer is regarded as an artist exactly equal with the director. His opinion counts for as much in the preparation of the script, the shooting of the picture, and he is as frequently consulted during the cutting. He is generally called into consultation long before the actual start of a production, and remains with it until it is well into the cutting. His name is deemed worthy of equal screen-credit with that of the director, and is frequently placed in electric lights outside the theatre.

In the Ufa studio there is nothing corresponding with the camera department of an American studio. Pommer knows all of the cameramen personally, and engages them for his productions exactly as he does his directors.

On the set, of course, the cinematographer works in much the same fashion that his fellows in America do. He has his crew of second and assistant cinematographers and, of course, his electricians. The First Cinematographer, just as is customary here, never touches his camera himself, but directs the photography and lighting.

In the actual production, however, there is one great difference from American practice. The exhaustive preparation

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Photographic Emulsions

by LEWIS W. PHYSIOC

THOSE who are engaged in pursuits directly connected with the art of photography probably know that there is an interesting history represented in the development of this beautiful combination of art and science. When we compare our modern processes with the early experiments, our idea of mere history is enlivened by the elements of a thrilling romance. In fact, when we begin to study the various stages of development we see them unfold like the acts of a drama, reaching its climax in the most recent achievements.

For the benefit of those who have not the time to search through the many volumes devoted to the subject, it has been suggested that some of the salient features of this development be set forth in brief, chronological order.

The Camera Obscura

Although apparently known for a long time before, it was not until 1569 that the camera obscura was put to a practical use, when Baptista Porta devised a toy, later improved by Guyot, that was used for tracing natural landscapes and views to be reproduced. The various designs embodied the simple principle of passing rays of light into the darkened chamber through a pinhole aperture. W. H. Wollaston, in 1812, found that by using a single, meniscus lens in lieu of the pinhole, the image was rendered more brilliant and well defined, and after numerous developments of this principle the two Chevaliers of Paris made, in 1840, the first real photographic objective. It is interesting to contemplate that our most modern apparatus is merely an elaboration of this anciently observed phenomenon.

Early Chemical Experiments

With the chemical department, as with the camera obscura, we may revert to the ancient students, for as soon as men were capable of rational speculations they observed the effect of light upon various substances. A shield removed from a panoply after a long term of peace had left its outline upon the wall. The bleaching of hides was observed in very remote times. The early painters were well acquainted with the action of light upon various pigments.

The first important advance in this respect occurred when W. K. Sheele discovered that silver chloride became darkened by the action of sunlight. His experiments were interesting for three very significant reasons. In exposing the chloride under water he discovered that, as decomposition took place, a soluble compound was formed, and that by adding silver nitrate new silver chloride was precipitated. This was the first hint of the principles involved in the manufacture of an emulsion. Then, by adding ammonia to the darkened chloride, the insoluble metallic silver was left behind, a palpable suggestion of the developing process. Also, he noticed that the violet element of light acted more powerfully on the silver chloride, a condition that has placed a limit on the results of photography through many phases of its development.

From the time of Sheele's discoveries other experiments followed with an enthusiasm that reminds us of those who are working over a puzzle and are close upon the heels of the key, producing silhouette prints of various objects, reproducing the symmetrical outlines and delicate tracery of the venal structure of leaves, etc.

But, unfortunately, the same light that made them destroyed them, and they could be viewed only for a short time. We can appreciate the disappointment expressed by one of those experimenters when he said "nothing but a method of preventing the unshaded parts of the delineations from being colored, today, is wanting to render this process as useful as it is elegant."

Fixing The Camera Image

After considering these experiments, it may readily be seen that the paramount idea was to fix the camera image. The first record of any sort of success is accorded a young Frenchman, Nicephore de Niepce. He strayed a little from the efforts of his brother workers, and combined some mechanics with his chemistry. He found that asphaltum was also subject to the action of light, but in a somewhat different manner. He covered a metal plate with a solution of asphaltum and oil of lavender, and exposed it for several hours in the camera obscura. The parts exposed to the light became insoluble, and the unlighted portions were dissolved away with a solution of oil of lavender and petroleum. The metal could then be etched, and the picture so obtained was probably the first example of photoengraving. There is nothing that might furnish a more interesting comparison between those experiments and our modern developments than Niepce's statement that it required from seven to eight hours to expose a landscape in open light.

The Daguerreotype

Coincidental with Niepce's operations, there was a scene painter who likewise was obsessed with the idea of fixing the photographic image. He was a good scenic artist; nevertheless he was not satisfied with his own efforts. Scene painters have ever been men who liked to look around. His interest in photographic processes was so great that he neglected his painting, and his good wife became concerned about his mental condition. In 1829 he entered into a partnership with Niepce. Let us pause here to consider the earnestness of a man so set upon a project as to acknowledge his limitations in prosecuting his designs and to call upon his competitor for help. Such a man seldom fails, for he is more interested in the actual achievement than in the glory attendant upon great accomplishments.

They plodded along together, not greatly improving their "heliography." They dipped in different chemicals and tried various metals for their plates—tin, copper, glass, and finally, they knew not why, polished silver. There was a peculiar persistence about this idea of silver. Some say it was Niepce's idea, others that Daguerre insisted upon it. But the real truth had not dawned upon them. They were discouraged.

Finally Daguerre recalled some of the experiments of the earlier workers. They had shown that silver combined with iodine was sensitive to light, and he was convinced that Niepce's slow asphaltum should give place to the iodized silver plate. They tried it, but the images were so faint as to be useless. He and Niepce disputed, but soon Niepce died and his son carried on with the fanatical artist until accident solved the problem. The solution of the problem seems to have come about through the spilling of a bottle of mercury.

It is common knowledge that it is in the nature of some chemicals to give off fumes and of others to be greedy to combine with those fumes. So, when Daguerre returned to his investigations, he found that one of his old discarded plates had been acted upon by the fumes of mercury, and that each little particle of the faint silver image had become coated with condensed mercury. Daguerre discovered, to his joy and surprise, a well-defined delineation instead of the discarded failure. Here was another detail introduced into the foundation of the future structure of photography—a hint of the ultimate process of developing the "latent image."

The next development in the "fixing of the image" was introduced by another artist, Fox Talbot, a contemporary of Daguerre. He was out sketching, tracing a view from Woll-

aston's simple little camera obscura; and he, too, was inspired with the idea of capturing the fleeting image.

Talbot's experiments were important in having pointed off another period in photographic history. He substituted the paper support for the metal and the glass plates and raised the peg another notch in the scale of sensitivity, for, as he said, "Subjects such as white sails in full sunlight may be obtained in half a second," a great advance over Niepce's eight-hour exposure.

In the adoption of the paper support we also recognize the forerunner of our modern printing process.

Hypo: (Sodium Thiosulfate or Hyposulfite)

In the discovery of the use of "hypo" our romance is given a dramatic mood. When we review the experiments already described we recognize one serious embarrassment. After having succeeded in fixing the camera image, the next difficulty was to make the reproductions permanent, "to make them as useful as they were elegant."

The requirement was a solvent, strong enough to dissolve the unlighted (or unchanged) silver salts, but not powerful enough to remove the metallic silver. The search was long and tedious, because of the distinction between a physical solvent and a chemical reagent, and most solvents are powerful reagents. Various solvents were employed but were found unsatisfactory. Ammonia was tried, but this required a very strong solution which affected parts that needed protection; cyanide of potassium nearly met the requirements, but was extremely poisonous and expensive.

It has been recorded that Francois Chaussier as early as 1799 discovered the salt. Sir John Herschel, in 1819, was probably the first to discover that hypo could dissolve the un-reduced silver salts without attacking the metallic silver. However, it was not until 1837 that J. B. Reade used it in photography.

The remarkable feature of this hypo is the fact that from the time it was first used, and through its many stages of development, its position as one of the most important elements in the art has been unassailed by the most modern developments. We may be thankful that industrial chemistry and nature's stores have supplied us so bountifully with hypo. Its present price also furnishes an interesting comparison with that in the time of Reade, when it cost "half a crown an ounce."

The Wet Plate

Despite the popularity of the daguerreotype, photographic enthusiasts strove for something better. They were probably spurred on by the agony of the victim who sat for a portrait, with body and head rigidly set in a brace, and whose face was covered with white powder make-up to reduce the lengthy exposure. Another item to be considered was the cost. The silver plates were expensive. It seems ridiculous when we consider how much more silver than was necessary was contained in one of those plates. Another undesirable feature was the limitation to a single picture. The natural induction, then, was to secure a negative from which could be produced many positives. In this conception lay the real germ of modern photography.

Paper negatives were tried, and were subsequently improved by waxing and soaking them in oil, to render them more translucent. Glass was the ideal support, but it involved new difficulties and demanded further experiments. It was necessary to find something that would adhere to the glass and would, at the same time, hold in suspension the sensitive silver salts. Albumen, starch, and serum of milk were tried, which for a while furnished a little hope.

Finally, Le Gray suggested collodion, a mixture of pyroxaline, alcohol, and ether. F. Scott Archer accepted the suggestion, and in 1848 announced the first real photographic emulsion. This marks an important period and involves several features. The virtue of the collodion is its nature to support

the silver compound and yet not suffer from the effects of the silver nitrate necessary to form those compounds.

The collodion emulsion had one disadvantage, which led to the name "wet plate." Although the collodion held the silver salts, it entered into no compound with them and, when allowed to dry, the salts crystallized and destroyed the fabric and transparency. It was necessary to expose it wet. After development, the unexposed salts were then removed and the plate allowed to dry without the crystallization.

The use of iodide of silver was another feature. With the exception of Daguerre, other workers had used the chloride which blackened directly in the light. The iodide, except under specific treatment, gave no visual effect of light. Daguerre's mercuric accident probably suggested the development process. The most important feature, however, was the marked increase of sensitivity over that obtained previously, and there were introduced a quality and a practicability that startled even the most enthusiastic students. The wet plate combined such features as a fineness of grain that has never been excelled, crystalline transparency and brilliancy, and a broad range of values. Even at the present time, process workers in the publishing business use this method when excellence of reproduction is required.

While the sensitivity was low, compared to the modern dry plate, it was a great improvement over the Daguerre and Talbot processes, as the average exposure required was only ten to fifteen seconds.

The Dry Plate

Even the beauty of the wet plate could not long compensate for the tedious method of preparation and the inability to reproduce anything but still objects. In attempts to improve the process, it was observed that the soluble bromide salt entered into a finer solution with collodion and instead of floating the silver nitrate over the plate it could be introduced into the collodion solution drop by drop, forming an emulsified combination that could be spread on the plate; and that after washing out the solubles it could be allowed to dry. This is the first idea of what is properly termed the photographic emulsion.

The success of the collodion process naturally stimulated the search for other mediums for the suspension of the silver salts. Gelatin was selected as a substitute. Among the many experimentalists, Dr. R. L. Maddox is credited as being the first to produce really fine results.

The gelatin emulsion ushered in a period of extensive commercial developments, which continually demanded an increase of sensitivity. This sensitivity—or reduction of the time of exposure—influenced photography both as a profession and a pastime. The peculiar character of the gelatin emulsion is the remarkable combination it forms with the insoluble silver salts. The nature of this combination has been one of the most intriguing features of the art. But the important consideration is the speed. We have been shown that bromide and chloride of silver each has its individual maximum of sensitivity; the next discovery was that, when used together with gelatin under varying temperatures and under the so-called ripening and cooking treatment, there was formed a combination that created a tremendous increase in sensitivity.

The commercial stimulus resulting from the introduction of the dry plate was represented in a convenient product that could be placed into the hands of millions of enthusiasts; snapshot exposures, the fascination and mystery of the latent image, the magic of development; and we may include as a historic period in the evolution, the adoption of celluloid as the base, which made possible the advent of motion pictures.

Panchromatic Emulsion

Ever since the experiments of Johann Wilhelm Ritter, in 1801, when he discovered that the violet and ultra-violet rays were apparently the more active agents in photography,

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Small Sets

Maximum Production Value With Minimum Cost

by **GORDON WILES**

Art Director, Fox Studio

WHEN the movies became "big business," they proceeded to lose one of their greatest assets; the ingenuity of the technicians. Most of us can remember the time, not so far distant, when Art Directors and Cinematographers were constantly faced with the problem of making a very small expenditure of money show big returns in production value on the screen. We got our effects, perforce, more through suggestion than through direct exhibition. If we wanted to show a Grand Hotel or an Empire State building, we could not actually build it—so we learned how to use the magic of the camera to suggest it. Nine times out of ten, we succeeded. Of recent years, however, when forced with the same story requirements, we simply have taken the easiest way; spent a little more money, and actually built whatever we needed, whether it be a massive hotel-lobby (needed for two scenes) or a battleship. One of my friends, in discussing this aspect of production, recently drew upon his experience with one of the major companies, and told of an elaborate night-club set which was constructed solely for use as a background for a single scene which showed the star leaving the night-club. As it reached the screen, the scene was shot from within the night-club, looking out at the street. It lasted for but a few seconds on the screen. Yet—the complete night-club (inside and out) had been built, furnished, and dressed with people and an orchestra. The set alone cost many thousand dollars, while the furniture, players, electric current, lighting-equipment, and personnel (not to mention the technical crew and the time element) ran the cost up to an appalling figure. And all for one scene which could have been done with a door, a backing, and a dozen extras! Is there any wonder that production costs have skyrocketed to an impossible height?

As a consequence, the cry throughout the industry today is for lowered costs. But this economy must be effected without any loss in production value. No individual or department can hope to achieve this result, single handed; with earnest, whole-hearted and intelligent cooperation between all concerned—producer, writer, scenarist, art-director, director and cinematographer—not only may this desideratum be attained, but the quality and cleverness of our films materially increased. I am convinced that if proper care and ingenuity are exercised in the design of sets, every department will inevitably benefit. First of all, of course, production costs would be lowered. More important, we could have better scripts, better preparation, less dialogue, fewer loopholes for extravagant "protection-shots," far less overshooting, and (best of all) double the production value on the screen with only a small fraction of the cost. In a word, we would once more be making real motion pictures, of the sort that built up the industry.

Personally, I do not consider this to be in any way "cheating." After all, the only thing that brings in a return is what actually reaches the screen. Here at the Fox Studio, we have a slogan, "What does it mean at the Box Office?" The watchword of the production departments—especially the art and photographic departments—should be "How will it show up on the screen?" If we build a big set to give a picture production value, we should take care, first, that it is actually necessary to a production, and secondly, that it actually reaches the screen intact. If it does not comply with these two qualifications, it is an extravagance.

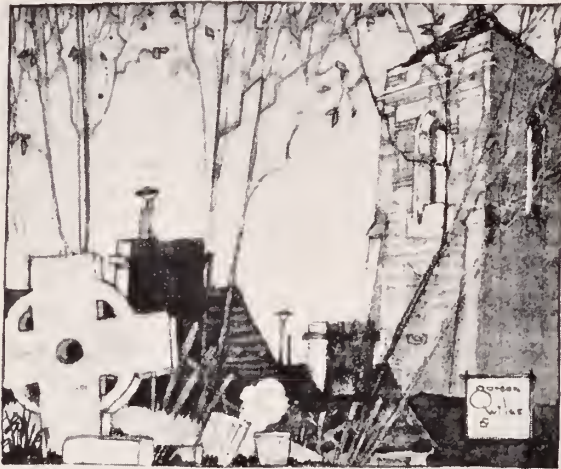
To my mind, the important thing is not the actual appearance of a set in itself, but its ultimate appearance on the screen. If, by application of the laws of design, perspective, and cinematography we can give the impression of a big set through some less costly expedient, why should we not do so? We are keeping faith with the public, certainly, for we are giving them a luxurious set in so far as the camera shows it. We are keeping faith with our employers, for we are saving them money. And we are keeping faith with our own artistic ideals, for we are at once utilizing our artistic and technical ability to the full, and enabling our story to be told with the greatest effect.



Applying the laws of perspective and design makes this inexpensive set pay big returns in production value.

At this point, concrete illustration must be called upon to prove or disprove this abstract theorizing. Fortunately, I am at present working on a production with exactly this thought in mind. The picture is "Rackety Rax," a satire on gangsters. In it, a super "big-shot" of the "little Napoleon" type gains control of a chain of rackets—dog-races, horse-races, and finally college football. It is a story ideally suited to screen treatment, for a great deal can be told visually. I have had this thought in mind in designing the sets; fortunately, too, I have enjoyed unusual cooperation from both the scenarist and the director. As a result, I have been able to put their theories into actual practice. Not only have we been able

to tell a great part of our story visually, by means of the action and the sets themselves, but we are saving money without the least sacrifice of production value. Every shot—every camera-set-up—has been carefully prepared so that it will give the maximum effect on the screen. I do not believe that the cost of any single set in the picture will exceed \$700—some of them will cost less than \$300—yet with these sets, averaging, say, \$500 apiece, we are getting the same production value of sets which, if handled normally, would cost at least \$2500.00 each.



Here, the use of a foreground miniature adds to the pictorial effect, and permits the use of a small, inexpensive set.

In one sequence, for instance, we want to establish that this racketeer is not only a racketeer, but "the big fellow." According to the script, he lives in a luxurious hotel, which he owns, and has staffed with his yeggmen. Accordingly, we introduce him entering the hotel. Such a set can be extremely expensive—and yet fail to tell the story, or register in a manner commensurate with its cost. Our set is simple; at the rear of the revolving door of the hotel, with the street behind shown by the projection process. The floor is an elaborate marble design. To the left is a circular desk. To the right, in the middle-distance a flat representing a long row of elevators; only the first of these elevator-doors is actually needed; accordingly, the rest are but dummies. In

the right foreground is the bellhops' bench. Upon this bench we have a row of these gangster-bellhops. Through their dialog we establish the fact that the "big fellow" owns the hotel, and controls the sports rackets. Suddenly they spring to attention; the camera pans left to the door as the "big shot" enters and walks over to the elevators, and exits. Thus in one scene, with two logical movements of the camera, we have made a \$500 set tell part of our story, established an important character, and give the production value that might otherwise have necessitated a \$5000.00 set.

In the gang chief's office we again use the set to establish the man's characterization. One simple flat—a wall, with big portraits of Foch, Haig, Pershing, and Diaz, in uniform, hung upon it. In the centre is an equally large portrait of the gang leader, in a top-sergeant's uniform. Beneath runs a low bench; seated upon this bench are half a dozen of the gangster's henchmen. The gang chief passes, going to his office. In one scene, with one simple set we have established his "little Napoleon" complex—at a trifling cost. In the office itself, we similarly establish the fact that he has raised racketeering to the heights of "big business." The back wall is covered with a map of his territory, with pins, as in a war-map, indicating strategic points—speakeasies, gambling-dives, etc. Beneath the map are large graphs, indicating the progress of his interests—speakeasies, gambling, dog racing, football, etc. In front of this is his desk—exaggeratedly large and low. In the foreground is the big double-door of the office. The scene opens with the doors closed. The chief enters, and the camera's angle just clears the door-sills, and shows the room, whose size is merely suggested. Again, we tell our story with a set, at so trifling a cost that the set need not be saved for use in other productions.

In another sequence, we want to establish another character: an attorney, a gentleman. In a similar manner, we suggest his office rather than show it. The action characterizes the man—and we play it in a single long-shot. Again, a saving. Again, we bring big production-value to the screen with little cost.

Such treatment, of course, demands far more careful preparation and production. The director and art director must work on the script with the scenarist; it would be well if the cinematographer could also do so. We must plan every set-up. We must know exactly what effects we will get with a given lens and viewpoint. We must foresee everything, and so synchronize our set and our script that there will be no need of reverse-angle "protection shots;" no chance of wasting our sets by using closeups where they are not needed, nor, on the other hand, using long-shots where close-ups would tell the story as well, or better.

On "Rackety Rax" we have been fortunate in securing perfect cooperation. The scenarist has welcomed this co-operation, and between us we have turned out a script that is truly a motion picture on paper—not merely a skeleton outline adapted from a short-story. Dialog has been cut to the minimum, and as much as possible gotten over visually rather than verbally. The director, Al Werker, has been thoroughly in accord with these views. I am confident that he will direct the picture in a manner that will make the most out of the material we have supplied him. He, on his part, is confident that this type of coordinated script and sets will make his task vastly easier, and enable him to turn out a more effective production, more efficiently. And as for the cinematographer, even though he has not been assigned as yet, I am confident that he, whoever he is, will quickly grasp the possibilities of such treatment. I have talked with most of the cinematographers on the lot, and all are enthusiastic over its possibilities.

It can be seen that such treatment as I have outlined for this production must inevitably involve more time in prepara-

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The Duplication of Motion Picture Negatives

by **J. I. CRABTREE** and **C. H. SCHWINGEL**

Communication No. 488 from the Kodak Research Laboratories.

This is the third and concluding installment of this valuable article. July and August issues containing the first two installments are available.—The Editor.

VIII. SUMMARY

1. As a result of tests with a large number of combinations of emulsions, the best duplicate negatives, with respect to both tone reproduction and graininess were obtained with Eastman Duplicating Positive film emulsion series 1355 and Eastman Duplicating Negative film emulsion series 1505.

2. In order to maintain the graininess at a minimum, it was necessary to develop the duplicate negative to a low gamma (0.55) and the master positive to a correspondingly high gamma (1.85). Since the graininess of a positive image of given density increases with increase of density of the negative from which it is printed, it is necessary to maintain the minimum density of both the master positive and duplicate negative as low as is consistent with good tone reproduction.

3. It has been found that the graininess-gamma curve of the negative emulsion 1505 is straight and rather steep, but that of the duplicating positive emulsion 1355 has a long shoulder which runs almost parallel to the gamma axis. This explains why it is desirable to develop the master positive to a relatively high gamma so as to insure a low gamma, and therefore, minimum graininess for the duplicate negative. Although increasing the gamma of the master positive to a value greater than 1.85 would result in slightly improved graininess, the latitude of this material is diminished so that with fairly contrasty negatives it is not possible to obtain perfect tone reproduction.

4. A fine grain borax type of developer was found to be most suitable for the development of the duplicate negatives, while any good positive developer was satisfactory for the development of the master positives. The low degree of development required for the duplicate negative tended to introduce certain development defects which were at a minimum in the case of duplicating negative film, emulsion series 1505.

5. Poor contact between the negative and positive during printing improved the graininess but this was accomplished at the expense of loss in picture definition. The use of diffuse light for the printing caused a slight loss in picture definition without an apparent effect on graininess.

6. Duplicating Positive film, emulsion series 1355, has great latitude so that when the master positive was printed on this material and developed to a gamma of 1.85 and the duplicate negative printed on duplicating negative film (emulsion series 1505) and developed to a gamma of 0.55, a practically perfect reproduction of the tones of the original negative was secured. It was necessary, however, to print the minimum densities of the master positive at a density of at least 0.40* and of the duplicate negative at a density of at least 0.3 to avoid distortion due to the use of the underexposed regions of the materials.

7. Prints from duplicate negatives of sound records were practically indistinguishable, by listening tests, from the original prints, although tests with frequency records indicated an in-

crease in ground noise and some losses at the frequencies of 5000 and above.

IX. PRACTICAL INSTRUCTIONS FOR MAKING DUPLICATE NEGATIVES

Duplicate motion picture negatives may be made in the usual way without departing from ordinary methods of exposure and development. The quality of these duplicates will be better than could be obtained on other existing emulsions using similar technic.

A. The Master Positive

The master positive should be made on Eastman Duplicating positive film, emulsion series 1355. The speed of this material is approximately the same as that of ordinary motion picture positive film. A lavender support serves the purpose of reducing halation effects and also for identification. The emulsion is capable of giving very fine grained images with good contrast on full development. Its latitude is such as to insure correct reproduction for the greatest range of tones likely to be met with in an original negative. Also, it has the ability to reproduce the detail registered on the original.

B. Printing the Master Positive

When printing the master positive the first requirement is that sufficient exposure must be given so that all the tones and fine detail of the original are recorded faithfully. **A good master positive appears denser than the average projection positive, and to the inexperienced eye seems to be overprinted.** The least dense portions ("catch-lights") of any master positive should have a measurable density . . . a graying-over of the highlight areas, otherwise the reproduction of tones in the final print will be unsatisfactory, giving the print a "duped" appearance. Timing of the master positive should be for the highlights, allowing the shadows to take care of themselves. It must be remembered that the lavender support contributes to the density values, and an allowance must be made for this when judging exposure.

C. Development of the Master Positive

The master positive should be developed in any good positive film developer such as formula D-16. Developers of the borax type (D-76) are not capable of giving sufficient contrast.

The degree of development must be such that the contrast of the master positive is equal to or greater than that of a normal exhibition print (gamma approximately 1.8 for average good quality originals). This high contrast of the master positive permits the desired low degree of development of the duplicate negative which insures a minimum graininess of the image in the exhibition print.

Using rack and tank methods, with fresh motion picture D-16 developer at a temperature of 65° F., the development time for the master positive will be from 9 to 11 minutes depending upon the manipulation technic. With continuous machines the time of development differs widely with their design.

The fixing, washing, and drying processes for master positives are identical with those employed for motion picture positive films.

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* This value is that of the actual silver deposit. To obtain the total film density the support density of 0.18 must be added to it.

The Baker Process

by WM. STULL, A.S.C.

A NEW method of process photography, unusually adapted to the requirements of commercial production, has just been announced by Friend W. Baker, who is well known as one of the pioneers of process cinematography. The new process embodies the results of Mr. Baker's seventeen years in the cinematographic profession, and is the direct result of more than eight years of research and experimentation. Essentially, it is an attempt to simplify the making of process shots through the use of various existing commercial practices.

The Baker Process consists of the simultaneous making of both a negative of the foreground action and a travelling matte thereof; these are subsequently used in an optical printer and double-exposed upon any desired background negative. Every piece of equipment used in the process is already in commercial use today, while the technique of its use is extremely simple. According to Mr. Baker, the new process shows many advantages over existing methods, both in simplicity, commercial applicability, and flexibility.

The foreground action is photographed against a plain black velvet background. The camera used is a standard bipack camera, loaded with standard bipack film—"red Ortho" in front, and Panchromatic in the rear. The front film photographs the actual foreground action negative, and the rear film the travelling matte of that action. This is achieved by double lighting the action. The set is first lit with red light (i. e., by standard incandescent lighting units fitted with orange-red screens), in such intensity as to produce an over-exposed, silhouetted image on the red-sensitive film at the rear. After this, further lighting is arranged, using ordinary incandescent units, with whatever diffusion may be desired, so that the subject is normally lit with white light, in order to produce a normal negative of the action on the Orthochromatic film in front. The black background is, of course, not illuminated. The scene is then photographed in the normal manner, and the two negatives developed. The front negative is normally processed, while the rear one is treated so as to produce a mere silhouette, for the matte. A print is then made from this matte negative to serve as the complementary matte in making the composite print. The normal Orthochromatic foreground negative, the two mattes, and any desired background negative are then combined in a single composite negative, made by conventional double-exposure with an optical printer.

Due to the fact that the Orthochromatic film used for the actual negative of the foreground action is reversed in the camera—run, that is, face-to-face with the rear negative, it is necessary to reverse the picture laterally in order to have the finished picture correct as to right and left. This is done by placing the camera at right angles to the action photographed, and using a 45 degree mirror in front of the lens. A similar prism, mounted directly on the lens would, of course, serve the purpose equally well, but the use of a mirror is held to be equally efficacious, and both cheaper and simpler.

The simplicity of this process, together with the fact that all of its components are parts of established commercial practice should make it very valuable for studio use. The process would appear to have rather greater flexibility than most of the established processes, with the possible exception of the transparency projection process. It enjoys two advantages over the latter, however, in that it avoids the "hot spot" which is almost inescapable with projected background, and likewise does not require so large an amount of stage-space or special equipment. In addition, too, the fact that practically

every stage of the process is a part of every-day commercial practice should make it extremely economical—a consideration which, under existing conditions, will appeal to both major and independent producers.

The Baker process is covered by several patents issued to Mr. Baker several years ago, and is therefore a proprietary process. Regarding the process and its development, Mr. Baker says: "I first conceived the idea of this method of making process shots more than eight years ago. At that time, I carried on as extensive experiments as were possible with the equipment of the day, and applied for patents covering the basic features of the process. These patents were issued to me shortly after. I was forced, however, to turn my attention to other activities for a while, pending the development of various pieces of apparatus necessary to realize the process as a commercially practicable one. These developments have since taken place with the introduction of the bipack color process and equipment, machine development, incandescent lighting, and the perfection of optical printing equipment and practice. The Baker process is now, therefore, a commercial reality. There is literally no factor involved which is not a part of present-day commercial practice.

"Bipack cameras are in common use. Bipack film is as readily obtainable commercially as is black-and-white. Machine development is the general rule for either black-and-white or color negative. Moreover, there are today in Hollywood three large laboratories regularly processing bipack negative: Consolidated, Technicolor, and Multicolor. Any one of these three can handle the two negatives for my process in the regular course of their daily work; the special manipulations necessary in the development of the Panchromatic (rear) matte negative are simple, and within the range of control permitted by modern machine development.

"Optical printing is now an integral part of studio production. So far as I know, every studio has an optical printing department; even the smaller independents have access to such services. And any good optical printer may be used, so long as it can be adjusted for register. If this adjustment is not provided, it can easily be added to any optical printer.

"The photographing of the foreground action of scenes made with this process is far simpler than with any other process. Having spent more than ten years specializing in process work, and having worked with practically every known process, I feel that I can say this with authority. Most cinematographers, I know, find a good deal of difficulty in balancing the red-orange light used in certain of the existing processes; although my process likewise involves the use of red light, it is a very simple matter to use it. All that is necessary is to light the scene—with this red light—so as to give a silhouetted image; then light for your regular negative with white light, balancing it exactly as you would for a straight scene with orthochromatic film. The white light which falls upon the subject does not in any way influence the matte negative, which is made by the red light, aside from adding to the silhouette effect.

"The printing of the composite negative is simple, run-off-the-mill optical printing plus double exposure, which is being done every day in all optical printing departments.

"No special makeups, or anything of the sort are required: from the first to the last, every detail is part of modern commercial practice.

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Coordination

by **DR. L. M. DIETERICH, A.S.C.**

Consulting Engineer

COORDINATION can for the purpose of this study be broadly considered as the harmonious relationship of actions or efforts for the achievement of a desired result.

It is necessary, whenever results depend upon the efforts of more than one man, and even for one man, upon the harmonious co-action of the several personal faculties.

If we try to apply this definition or rule of practical logic to an organization, necessary for the production of a motion picture, we are immediately confronted with the staggering amount of detail efforts, which must be properly coordinated in the complex array of parallel and succeeding interdependent human and apparatus performances.

Even the first step or start in the production of a motion picture, the selection of the underlying story, plot or theme should depend or be largely influenced by such pre-realization, well defined by the word "judgment."

The mature psychological judgment of the general manager, in our case the "producer," may prompt him to select a "story," which he knows or thinks, should possess great entertainment values for the public.

It is, however, of dominant importance, that the producer must, even at this initial decision be possessed of full knowledge (which can only be gained by practical experience) of the aforementioned limitations of personnel and apparatus performance.

He must convince himself without doubt of the efficiencies of his staff and physical studio equipment, not only in general, but especially as related to the selected story, to be sure that the final screen presentation will impress upon the audience the full dramatic value of this story.

When he has selected from his personnel and equipment the necessary elements of highest possible efficiency, he may find that such available working ensemble needs additions and/or replacements, in order to establish a working organization, which in his "judgment" should assure satisfactory box office returns.

Supposing, however, that the selection of all active elements, comprising this special organization, is faultless as far as their individual excellence is concerned—the final success is thereby by no means safeguarded, and absolute failure may even be the final result, if the detail performances, though they be of unexcelled perfection, are not properly coordinated.

Perfect coordination, in this case, depends upon the fulfillment of several conditions: Suppression of individual or departmental and purely selfish credit-desires, unintentionally, but often intentionally injuring other detail efforts to the detriment of the whole; harmonious helpful cooperation to that extent, that even individual excellence must be suppressed if it increases the merits of the whole, by maintaining harmonious balance with other, less perfect performances, and finally the realization and subsequent control of activities, acknowledging the fact, that there is in this complex coordination of numberless detail efforts not one detail of such minor importance that it can be neglected.

There is at the same time no detail of motion picture production, nor any limited number of them, which is or are the sole element, which controls or effects the success or failure of a "picture."

This statement will probably be vehemently contradicted by the author, scenario writer, director, art director, costume designer, cameraman, cutter or editor, electrician, property man, actor, casting director, laboratory chief and all his assistants and so on throughout the list of employees, any one

of which in fact can nullify the best results of the efforts of the others.

These actually existing convictions (ask any one of the above list) more than anything else prove to us, that properly established coordination is useless, if not producing and followed by proper and disinterested cooperation.

All of these preceding statements have been of necessity of such broad terms, because they had to include all of the thousands of interrelated activities of hundreds of individuals and had to consider the numberless difficulties of operating a vast number of delicate apparatus.

To be of real practical and exhaustive value, it would be necessary to expand this article into a work of many volumes, containing the analytical thoughts and observations of a number of experts and experienced individuals, accompanied by statistical facts and covering the entire history of the motion picture industry and containing also the more or less hypothetical recommendations of such contributors.

We will, therefore, consider only one link or department in the chain of interacting performances and try to show its close relationship to practically all other departments or constructive activities.

It will be shown that this department is of such importance that it is really the most important of all the departments.

But we frankly state, that if any other department would have been selected if could conclusively be proven that this other department is THE most important one and we certainly would get the approval and most enthusiastic support from any individual, actively performing the responsible duties of THIS department.

To be in harmony with the nature of this publication, we of course select as a striking example the camera department.

The perfect motion picture has not yet been produced, the perfect camera department is as yet not existing, neither in organization, personnel, nor technical equipment, and therefore modern photography is still far removed from perfection.

But be that as it may, it is nevertheless an undisputed fact that there have been many pictures with publicly acclaimed beautiful photography and many pictures photographed by the same cameraman which were justly criticised for lack of satisfactory photographic effects.

The reason for such photographic failures was not a lapse of efficiency of the camera department in its personnel or apparatus, but the handicaps under which this department had to perform and solely caused by lack of intelligent cooperation of other departments.

In the production of a motion picture it is not sufficient that one department excels in its own sphere, it must have knowledge of the limitations of other departments. Otherwise the results of its own endeavors are crippled and the performance of his neighboring department is loaded with undue burdens. Result—the whole production suffers.

We may here quote the statements of a department head of years of experience who very forcibly depicts conditions, actually existing at present and showing how detrimental lack of proper coordination and cooperation influences the "making of a good picture."

He states that photography in motion pictures is not con-

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HAL HALL

says

Thanks

NOW and then a little ray of sunshine breaks through the clouds that usually hang over an editor's head; and no one but an editor, who is accustomed to receiving nothing but the complaints of his readers and his bosses, can realize just how much these little rays of sunshine mean. Of late this writer has received a flock of letters congratulating him upon two of his editorials. We thank those writers.

Must be a lot of people who hear nothing but the kicks, because a large number of our letters have been written concerning the editorial "Appreciation," which appeared in the June issue. One of these letters came all the way from France; and the writer of the letter was so sincere in what he had to say about the editorial and the magazine as a whole that he enclosed his renewal of his subscription—although it had not yet expired. He explained that he wanted to be sure he would not miss the magazine for even one issue.

The other editorial was the one in the July issue on the subject, "Reward," in which this writer gave his personal views regarding the treatment of former soldiers. Well, we are glad our readers have liked what we have written. We only hope that they will continue to like it.

It Won't Be Long

ONLY two more months remain in which to enter the \$1,000.00 Amateur Movie Making Contest which this magazine is conducting. Just sixty-one more days in which to get your films in shape and ship them if you wish to try for the valuable prizes that are being offered. Midnight of October 31st, 1932, is the deadline for getting the entries shipped. So, if you have not yet started your picture, you had better get going today.

In addition to the four cash prizes of \$500.00, \$250.00, \$150.00 and \$100.00, there are equipment prizes that total more than \$1000.00 in value. These and the recognition that comes to the winners should make this an attractive contest for the Home Movie Maker who takes his picture-making seriously. This contest will have an international flavor, for the entries are coming from France, Holland, China, India, Canada, Great Britain, the United States and—today an entry came from far-off Korea from a medical missionary who says that if he wins a prize the money will go to the work of caring for the sick.

May we suggest to you amateurs who are entering a picture that you will be doing all of us of this staff a great favor if you send your pictures along as soon as possible. Many are holding their pictures until the last minute. This will make a terrific rush at the end. If you can send your entry now we will appreciate it.

Vote

THIS may seem a bit odd on a page of a technical journal, but I feel that it belongs here. For years I have listened to friends yapping about the manner in which our government is conducted. They complain about this department and that, and make political speeches in the living room that would elect a new President. Why not quit talking and go out to the polls this coming presidential election and cast the ballot that is your right in this Republic? If the serious-minded people of our country would vote more and talk less we might have better government.

Cutting Salaries

THERE seems to be a bit of encouragement ahead in the line of business. From all sides there comes a feeling of optimism, and it does begin to look as though better times are just around the corner.

When good times do return we wonder what certain employers will do in the way of finding an excuse to cut salaries and retain the cuts that have already been put into effect. What we are driving at is simply this—A lot of individuals who have plenty of money for their own enjoyment and for meeting their own bills, have hidden behind the excuse of "depression" in order to cut and slash the salaries of the men and women who are giving their all for the interest of their employers. This is dirty—but damnably true in many cases. And what is the result! Anyone with an ounce of sense knows that no man or woman is able to give the same efficient service if he or she does not know where the money is coming from to pay the next month's rent or meet the bills for the ordinary things that are necessary for just a mere existence. As a result many business concerns have been hurt by the nearsightedness of some individual who thinks that a slash in salary solves all problems. There is the element of human nature to always consider. A man serves most faithfully the employer in whom he has confidence. That confidence is not gained by making the worker suffer . . . sometimes go hungry.

Better Pictures

JUDGING from the previews this writer has seen of pictures slated for Autumn release, picture-goers will have better entertainment in the future than they have had in the past year or so. Someone in the picture business must have discovered that, depression or no depression, houses showing REAL pictures were packed.

Paramount, RKO-Radio, Warner Brothers, Columbia, Universal, Fox—and some of the Independents, have some really fine picture product for the theatre patrons. This is much better than offering free silverware or sets of dishes to those who attend the theatres. It is a sad state of affairs when a theatre has to offer a free trip to Catalina or Coney Island in order to entice patrons to drop a few nickels at the box office. Good pictures would bring many more nickels for, who wants to go to the theatre to get a free pair of shoes? This writer wants to see good pictures—so do most of us.

The Fan Magazines

STUDIOS and some of the trade press are making a terrible squawk about the manner in which "Fan" magazines handle interviews with the picture players—and especially about one interview in particular which recently appeared in one of these publications. There is talk of censoring all stories by the magazine writers, barring them from the studios, removing picture advertising from their pages, etc.

This writer takes no sides in the controversy. However, it seems as though the industry is a bit late in discovering that a lot of drivel is handed out in many of these interviews—and a large part of it is inspired by members of the various publicity staffs. There is one thing the industry forgets—that many a star's face has been saved by the discreet fan magazine writer who had better judgment than to print some of the silly remarks of the players. Why not warn the writers and instruct the publicity workers and stars themselves in what to say.

Du Pont's New Panchromatic Film

by DR. V. B. SEASE

PANCHROMATIC film made possible the adoption of the incandescent lamp as a convenient method of illumination in the making of motion pictures. The success of the incandescent lamp in the motion picture studios then stimulated much work for the improvement of panchromatic film.

The energy emission of the incandescent lamp increases in passing from the blue to the red end of the visible spectrum. In order to take full advantage of the light from such a lamp, it has seemed logical to increase the yellow and red sensitivity of panchromatic emulsions.

The results achieved along this line have meant a considerable saving in studio lighting, as well as more comfort for the people who work under the lights, but at the same time critical artists have pointed out the failure of highly red sensitive emulsions to record certain objects faithfully, particularly human faces. Some of the latest panchromatic types of negative tend to record too heavily the red lips and the ruddy skin of motion picture actors and actresses. Since make-up is a well established art in motion picture studios, it has been possible to obtain satisfactory results in spite of the high red sensitivity of the emulsions by altering the make-up. The portrait photographer, however, takes his subjects more or less as they come, and he has pointed out emphatically that the prints from highly red sensitive negatives often yield very chalky countenances.

filter factor table below shows the factor for the B (green) filter to be less than the factor for the A (red) filter.



Fig. 2. Spectrograms on du Pont Special (A) and new Superpan (B) films.

The spectrogram of the new emulsion is shown in Fig. 2 in comparison with the spectrogram of the former high speed panchromatic. Fig. 3 shows for similar light sources the spectral response curves for the film and for the human eye. This emulsion has a sensitivity corresponding quite closely to that of the human eye. The excess sensitivity of the film toward the violet end of the spectrum may be quite accurately corrected by a K $1\frac{1}{2}$ filter. Thus corrected it records brightness of objects in nature as the human eye sees them.

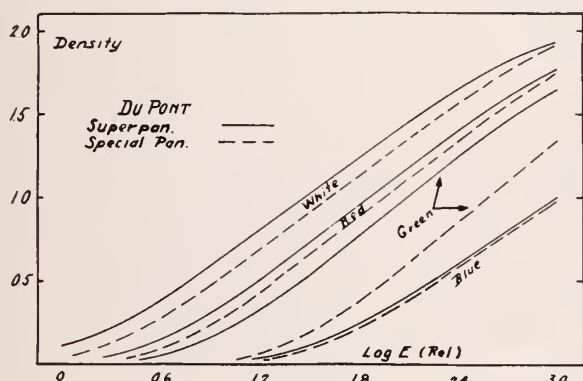


Fig. 1. H & D curves for du Pont Special and new Superpan films.

White: Unscreened incandescent.
Red: Screened by Wratten A filter.
Green: Screened by Wratten B filter.
Blue: Screened by Wratten C filter.

Recognizing the error of the trend towards higher red sensitivity, the du Pont Company has concentrated work on panchromatic emulsions with greater sensitivity in the green region of the spectrum. This work necessitated the discovery of new types of sensitizing dyes and new technique in their application. It has also required improved factory equipment and specially trained factory personnel for the film must be handled, during manufacture, in total darkness at almost every point.

The most recent improvement now being offered to the photographic industry by the du Pont Company is an emulsion with increased sensitivity, the increase being most noticeable in the green. The sensitivities of the new product through the tri-color (A, B, C) filters are shown in Fig. 1 where a comparison is made with the Special high speed panchromatic which has been the standard in recent years. These data were obtained with incandescent light. With daylight, the high green sensitivity is still more striking. Reference to the

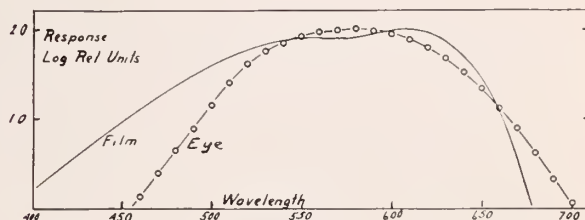


Fig. 3. Spectral response curves for the film and for the human eye.

The fine grain characteristics of this emulsion are the same as that of the former du Pont emulsions which have been so satisfactory to the trade. The filter factors are obviously quite different. These factors for sunlit scenes are given in the following table:

Filter	Filter Factor
Aero No. 1	1.7
Aero No. 2	2.7
No. 12 Minus Blue	2.7
K 1	1.9
K $1\frac{1}{2}$	2.0
K 2	2.0
K 3	2.2
G	2.9
23 A	6.0
A	8.5
B	5.6
C	11
F	17

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"Rarin' Pinto"

Morgan F. Reynolds



"At Grandmother's Knee"

D. Schneider



"Volga River"

D. Schneider

Concerning Cinematography

Critical Comments on Current Pictures
by **WILLIAM STULL, A. S. C.**

O. K. AMERICA!

◆ The past few weeks have seen the appearance of so many excellently photographed productions that it is extremely difficult to decide which to mention first, or to treat them with the proper degree of detail. Perhaps the finest example of all-around cinematic artistry is "O. K. America!", the work of Arthur Miller, A. S. C. Mr. Miller has rarely, if ever, turned in a finer, more thoroughly artistic piece of work—and he has many notable films to his credit already. He has in this production embraced a wide variety of moods, settings and action, with perfect artistry and coherence. I have rarely seen a picture photographed with so sure a sense of cinematic feeling. Whether the scene be played in a night-club, a newspaper office, a dive or a tenement, Mr. Miller's treatment is always keyed exactly to the action, and the photography, though pictorial, is never intrusive.

"O. K. America!" is, I understand, one of those rare productions which both the supervisor and the studio executives "forgot," leaving the writers, director, cinematographer and cast strictly alone. The result is such an unqualified success for all concerned that it is to be hoped that other studio executives will take the hint, and develop faulty memories.

WHAT PRICE HOLLYWOOD?

◆ A few years ago, Charles Rosher, A.S.C., received the Academy Award for the best Photography of the year. Either at this year's Awards Banquet, or the next, I shouldn't be in the least surprised to see Mr. Rosher again called forth to receive one of the Academy's golden statuettes, for his work in bringing "What Price Hollywood?" to the screen is unquestionably the work of a champion. The photography throughout is superlatively beautiful, and adds the finishing touch of richness to an already lavish production. The lay critics frequently use the phrase "sumptuous cinematography"; I hope that they may see and study this picture—and learn what the phrase can really mean.

One must also pay high tribute to some sequences of brilliant montage effects, conceived by Slavko Vorkapich and executed by Lloyd Knechtel. They will undoubtedly start a new cycle of such effects, which is to be regretted, for not everyone has the ability and the grasp of cinematic art that these two have here exhibited.

LOVE ME TONIGHT

◆ A most unusually interesting example of how sheer cinematic brilliance can make an outstanding hit out of a practically non-existent story. Victor Milner, A.S.C. has contributed some of his finest photographic work, and Director Rouben Mamoulian has literally made something out of nothing by his direction. It seems incredible that any man with but four pictures behind him could be able to so perfectly utilize every artifice of the cinema.

The picture primarily exemplifies Mamoulian's conceptions of the relationship between cinematic and musical rhythm, as he has previously expressed them in this journal. He has, I believe, utilized every directorial and cinematographic trick known to directors from Griffith to Eisenstein, and to cinematographers from Billy Bitzer to Tisse. What is more, he has utilized them so cleverly as to be imperceptible to any but the trained film-technician, and in such a manner that they are, literally, the picture. And he has created a piece of first-class entertainment, and revealed new facets of the Chevalier personality in the process.

Primarily, "Love Me Tonight" is more a director's picture than a cinematographer's; but Milner has shown, if anything even more than his usual artistry. There are several shots decidedly reminiscent of Eisenstein and Tisse, and much that is unmistakably Milner. The only possible criticism of the production—other than of the wretchedly inconsequential story—is that in much of the picture the key of the photography seemed too low, which had the effect of slowing up the tempo, making it seem too ponderous.

PASSPORT TO HELL

◆ Again one of our outstanding camera-artists comes through with his finest recent work. John Seitz, A.S.C., photographed this production, and did a difficult job with consummate artistry. The picture is laid in a tropical setting, necessitating much high-key photography, despite the highly dramatic plot. Due entirely to Seitz' artistic treatment, "Passport to Hell" is, visually at least, one of the finest and most convincing tropical films I have ever seen. There was no need for recourse to unnecessary effect-lightings nor artificial, oily perspiration to make the tropical atmosphere convincing. In addition, Seitz' compositions were consistently pictorial. Gordon Wiles' settings were also noteworthy, for they were natural rather than movie-esquely pictorial.

MR. ROBINSON CRUSOE

◆ When Doug Fairbanks, Sr., went down to the South Seas to make this picture, he had the tremendous luck to find a capable cinematographer waiting there for him. Max B. DuPont, A.S.C., was the man in question; he had left Hollywood to seek quiet retirement on his plantation at Papeete—but Hollywood would not let him rest. "Mr. Robinson Crusoe" is in itself a very good reason why Max shouldn't get much opportunity to rest for a long time. Made there in the South Seas, with all of the limitations naturally attaching to such a distant location, the picture is a glowing tribute to DuPont's artistry and technical ability. It is pictorial in the extreme, and technically excellent. In addition, it's well up to Doug's standard as entertainment.

CONGRESS DANCES

◆ Although the print of this picture viewed locally, and shown at a meeting of the A.S.C. was an unusually bad print, and badly hacked to pieces in the process of abbreviating to suit American exhibition needs, "Congress Dances" must go down as one of the notable films of the year. The photography, by Karl Hoffmann, is extremely fine. It is a pleasure to see a picture which is not continually backlighted as are most American films. The settings were remarkable. The direction made rather too much use of the moving camera technique, but every move was logical, and done in a rhythmic fashion unknown to American directors, with the possible exception of Mamoulian. The picture demonstrated in a high degree, too, the relationship between cinematography and music. By all odds, it is a picture that is well worth seeing and studying.

ROMANCE SENTIMENTALE

◆ With such limited space as is at my disposal for this department, short subjects can rarely be commented upon. But Sergei Eisenstein's little two-reel gem, "Romance Sentimentale" is not an ordinary two-reeler. It is, I believe, Mr. Eisenstein's maiden experiment with sound, made several years ago, in

(Continued on page 36)

SENSATIONAL **IN 1931**

YET EVEN MORE IMPORTANT

»»» **IN 1932**

ACCLAIMED last year as a sensational medium for use with incandescent lights, Eastman Super-sensitive "Pan" has since proved equally valuable under arcs or daylight. Promising revolutionary advances in its original form, it has made even more surprising progress with its non-halation gray backing. Today, with rigid economy at a premium, it is at the peak of its importance. It gives the industry finest quality and maximum efficiency on every conceivable kind of "shot." Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN **SUPER-SENSITIVE**

PANCHROMATIC NEGATIVE (GRAY-BACKED)

.. In the Realm of Sound ..

S. M. P. E. Seeks Standards

ESTABLISHMENT of uniform national standards for all phases of the technical equipment and operation of the film industry, from the lighting and acoustics of studios to the projectors and screens of theatres, is proposed by the Society of Motion Picture Engineers. Plans for the undertaking are outlined in a letter from Dr. Alfred N. Goldsmith, vice-president of RCA and president of the S.M.P.E., to the American Standards Ass'n.

Creation of such standards would avoid the danger of confusion and waste resulting from the conflicting standards created by different groups within the industry, declares Dr. Goldsmith.

If the request of the society is approved, a technical committee representing all branches of the industry will be organized under the procedure of the American Standards Ass'n.

The industry also needs standardization of terminology, which is at present in a confused state, says Dr. Goldsmith. "Such terms as 'blimp,' 'zoom,' 'pan,' 'tilt,' 'projection angle,' 'wow,' or 'flutter,' and the like, are used without any official recognition. This situation requires correction so far as is feasible."

Among the standards for equipment and methods which are needed, according to Dr. Goldsmith, are film sizes, acoustics of both studios and picture houses, amplifying equipment, recording equipment, camera silencing enclosures, re-recording equipment for modifying sound effects, photographic printing equipment, cameras, and laboratory processes.

"Such fields as color photography also require study," Dr. Goldsmith states. "The various processes have never been satisfactory defined nor have the various forms of cameras, lenses, processing equipment, and projectors been put on a suitably precise basis. Three-dimensional pictures require definition. Frequency systems which give perspective impressions are classed as three-dimensional or 'pseudostereoscopic.' A considerable amount of confusion exists here on terminology."

New 16 MM. Step Printer

LOUIS S. UHLER of 3422 Howard street, Detroit, Michigan, this month announces an interesting piece of equipment in the 16 mm. field. It is a new 16 mm. Step Printer.

The new printer is motor driven, 400-foot capacity and prints 15 feet per minute. It has twelve light changes. It has double claws, cam and eccentric type intermittent. The shutter is the rotary blade type and the frame line is standard and can be adjusted. It has an adjustable friction takeup insuring positive take-up. The printer is constructed entirely of aluminum and weighs only 38 pounds. It is 10 inches wide, 20 inches long and 25 inches high and has an induction motor of 1/20 horse-power, 110 A. C.

16 mm. Sound-on-Film

WITHIN the next thirty days official announcement will be made of the establishment in Hollywood of the Ashcraft Laboratories with complete equipment and service for quantity production of 16 mm. Sound-on-Film.

Equipment has been developed for the reduction of 35 mm. picture and sound track directly to 16 mm. film, retaining all dimensions, the standards which have been set for 35 mm.

sound film. The Ashcraft Laboratories have developed equipment for the direct recording of 16 mm. sound film, re-recording and dubbing from disc to film and for sounding silent 16 mm. film. Another important announcement this concern will make will be the development of a Universal reproducing attachment to fit all late model 16 mm. projectors by which this miniature sound film is made available to the present owners of 16 mm. projectors.

New Camera Coming From Rico

OF CONSIDERABLE interest to the industry is the announcement this month from the Radio Installation Company of work on a new sound recording camera, adaptable for use with all recording sound systems. While satisfactory amplification equipment may be constructed by studio technicians, successful production depends upon a high quality sound camera. It is an endeavor to fill this need that the RICO organization has been working for some time to produce a sound head that will give satisfaction.

In the new head, the sound modulated light variations will be photographed on the film passing over a large diameter drum sprocket, which is rotated by a heavy, minutely balanced flywheel, driven thru a dynamic spring filter network. The accuracy of this flywheel and sprocket shall not vary more than .2 of .001 inch, as measured by a microscope focussed upon stroboscopic lines engraved upon the flywheel.

An additional sprocket acting as a pull down and hold back agent, will feed the film to free loops before it contacts the recording sprocket, eliminating any possibility of magazine flutter being transmitted to the film at the recording point.

Provision is made to accommodate either Bell & Howell or Mitchell magazines, by a removable adaptor plate, and the magazine takeup is thru a direct shaft driven friction clutch, entirely eliminating belts.

This new "RICO" sound camera will be offered with any recording method desired, either variable density with an optical unit for glow lamp operation, light valve, where valve is furnished by purchaser, or completely equipped for conventional variable area recording with a mirror galvanometer.

While the standard product is designed for the new "RICO" .1 HP DC synchronous motor with a shaft rotation of 1440 RPM, gear adaptors will be provided for motor speeds of 1200, 1500, 1800 or any other speed specified.

Ample lubrication is provided, and the use of ball bearings on the main drive shaft, together with oversized sprocket bearings, should insure a long life under continuous service. Standard accessories include tachometer, footage counter, and necessary speed and power control rheostats and switches.

Improved Microphone Is Developed by RCA

DEVELOPMENT of a radically new type of microphone for sound recording and radio broadcasting is announced by RCA Victor Co. In film work, it is possible to place the camera at absolute right angles to either sensitive side of the "mike" where sound pickup is almost down to zero and eliminate entirely the noise of the camera grinding. It will even permit whispered directions to performers which this most sensitive of "mikes" will not transmit. The problem of studio acoustics also is simplified.

Ufa

(Continued from page 8)

to which I have already referred does not confine itself to the writing of the script alone: it embraces rehearsal as well. Nothing is actually shot until every member of the cast is literally letter-perfect in his part. If there is music, this, too, must be perfect. In many instances, every scene is worked out jointly by the director, the cinematographer, the recordist, the composer and conductor and the cutter. Everything must, before it is photographed or recorded, be absolutely perfect, in every way, not only in itself, but in relation to every other part of the scene, and as a part of the complete picture. In consequence, the German director needs fewer takes, and far fewer "protection shots" than is customary here. More time is taken in rehearsal, but less film and labor is expended: when a scene is finally photographed, it is **right**. It is sure to fit into its place in the final picture, perfectly.

Partly as a result of this, there is far less "dubbing" or re-recording necessary than is the rule here.

The technical equipment of the German studios—especially, of course, Ufa—is every bit as good as that used here in America; in some cases it is far better. Absolutely silent cameras are universally used; there are no blimps, booths, bungalows or blankets necessary. Oddly enough, the cameras are French—the excellent deBrie Silent Cameras, which may be used uncovered within twenty inches of the microphone. The apparatus for the making of moving shots is likewise superior—especially the deBrie motor-driven perambulators. In lighting, arc lighting is the rule, almost to the exclusion of incandescent equipment. The Tobis sound-equipment is likewise excellent. The studio recording channels are much simpler than those I have seen here. The recording is done in a small, portable sound-booth, which is placed on the set rather than in a distant truck or monitor-room. Monitoring is through a loudspeaker rather than earphones.

There are a number of Cinematographers in Germany whose work I am confident will prove of interest to their American conferees: Karl Hoffmann, for instance, whose photography of "Congress Dances" has already been seen here, is at present Ufa's ace cinematographer. Very close to him is Gunther Rittau, who, with Hans Schneeberger, photographed the spectacular "White Hell of Pitz Palu," and is now engaged on Universal's "Iceberg." Lastly, is a little-known young artist by the name of Tchet. To be precise, his name comprises several more syllables than this, and sounds like a spasm of sneezing, but this young Russian has wisely abbreviated it to "Tchet," which is, I predict, one which will become famous in cinematographic annals. He has been working with Ufa for some time—he was with Karl Freund, A.S.C., as second cinematographer on "Metropolis"—but he has only recently graduated to the dignity of a First Cinematographer. His work shows a world of originality and freshness.

To sum the matter up, Ufa has developed a studio which, though less elaborate than many American plants, is none the less in every way as well equipped. There, the Cinematographer enjoys the prestige and honor that his attainments and responsibilities entitle him to, there, film-making is a recognized profession—an Art. And there, there still remains that esprit de corps which we here lost when the movies became a "big business racket."

The Duplication of Negatives

(Continued from page 13)

D. The Duplicate Negative

The duplicate negative should be made on Duplicating Negative film, emulsion series 1505. This film has sufficient printer speed so that enough exposure can be obtained through the dense master positive without changing printer lamps. The yellow dye in the emulsion, which absorbs the

wave-length of light to which the emulsion is most sensitive, reduces irradiation or light scatter and, therefore, insures good definition; greatly extends the latitude (ability to reproduce a wide range of tones correctly); and lowers the contrast of the emulsion. Duplicating Negative film must be handled in the darkroom with the same precautions as ordinary par-speed negative film, using the Wratten Series 2 safelight.

E. Printing the Duplicate Negative

As with the master positive, sufficient exposure must be given to the duplicate negative so that every tone and detail of the master positive will be faithfully reproduced. **Good duplicate negatives have no clear shadows, even when they are present in the original negative.** The shadows of the duplicate are always somewhat gray, and while those in some scenes may be more dense than others, depending upon the range of brightness in the subject, none of them should be glassy clear. Lack of exposure in printing the duplicate negative produces a lack of quality in the shadows of the exhibition print.

F. Development of the Duplicate Negative

The duplicate negative should be developed in the borax developer, formula D-76. The degree of development should be such as to reproduce the contrast of the original negative. If the master positive was fully developed, the average time of development for the negative when employing rack and tank methods will be approximately 7 to 8 minutes in fresh D-76 developer at 65° F. This degree of development corresponds to a gamma of approximately 0.5-0.6.

Original negatives may be divided into three general classes according as they are normal, flat, or contrasty. In the process of levelling up the different scenes for the duplicate negative, so that the final printing operation can be carried out at a single light setting and that all the prints will require equal times of development, the first rigid requirement is to keep the degree of development of the duplicate negative at or below the specified degree (gamma 0.55 or less), for this insures minimum graininess in the exhibition prints. When it is desired to change the contrast of the duplicate negative from that of the original, it is best accomplished by changing the contrast of the scenes in the master positive by varying the times of development. In general, studio negatives are quite uniform in quality so that usually enough variation can be obtained through slight changes in the master positive.

The duplicate negative should be fixed for 20 minutes in a properly compounded acid fixing bath. If the film is fixed in an incorrectly compounded bath or is allowed to fix for too long a period, the rate of washing out of the dye will be retarded. If the washing is incomplete or uneven, the dye which remains in the film will cause the print from the negative to be mottled and uneven. Rinsing the film for several minutes in water between developing and fixing will greatly accelerate the removal of the dye.

G. Printing Precaution

It is **very** important when making duplicates to clean the original negative and master positive, because defects are cumulative. Dirt on the original negative or master positive will show up objectionably in the final print. After the original negative and master positive have been timed, they should be carefully cleaned to remove all traces of dirt. Chamois skin or a good grade of plush moistened with carbon tetrachloride should be used for this purpose. Directions for cleaning films are given in a previously published article entitled "Cleaning Liquids for Motion Picture Film."

Acknowledgment

The authors are indebted to Messrs. H. A. Doell, A. J. Miller, and H. Parker, all of this laboratory, who assisted with the experimental work.

Reference

7. Carlton, H. C., and Crabtree, J. I.: Cleaning Liquids for Motion Picture Film, Trans. Soc. Mot. Pict. Eng., No. 30, 277, 1927.

Coordination

(Continued from page 15)

sistently good. He says:

"The reason is that motion picture photography is not a one-man job—yet everyone in the studios today seems to labor under the impression that it is. You can't make a picture by merely getting a cameraman, giving him some film and a camera, and telling him to go out and make a picture. You've got to cooperate with him: give him something to photograph—people, sets, and a story. Furthermore, each of these things has to be provided with the thought of their suitability to being photographed. For, after all, that is the only real reason for everything that goes into a moving picture; to be photographed and sold to the theatre-going public. You can make the best actors in the world play the greatest story, against the most gorgeous sets—but if any of them—or all of them—are not individually and collectively suited to their jobs of **being photographed**, the result won't be as successful as it could be.

"You would think, of course, that after some thirty years of making moving pictures, picture people would realize this fact: but most of them don't. Instead of thinking in terms of the completed picture upon which they are working, most of them think merely in terms of their individual job. They forget that their work must eventually be filtered through the lens of the camera in order to be really completed, and passed on to the public. Instead, then, of being **camera-minded**, they are **job-minded**. As a result, the picture suffers.

"In theory, every department—every individual, from the producer down, should do its work constantly mindful of the fact that its contribution must, in some way or other, be photographed, and that, to be photographed to the best advantage, it must be perfectly coordinated with the contribution of every other department in such a way as to give the cameraman a photographically perfect subject to photograph. Then we would have really fine pictures!

"But that is theory. In practice, things work out very differently. Each department does its work as well as possible—but apparently with only the thought of proving its own brilliance, regardless of how the other factors that go to make up the picture may suffer.

"In the very beginning of things, a story is selected. From some of the things we see on the screen now-days, it would certainly seem that the stories were selected by people who had never seen or heard of a camera. But, no matter: the producers have come in for quite enough criticism on this score elsewhere—we all have heard the story of their story-blunders often enough, though we rarely hear much said in favor of the times when they **didn't** blunder. At any rate, our story is selected.

"Then the story is adapted—put in continuity form, so that it may be photographed. Here is a job that certainly calls for camera-mindedness. Sometimes the scenarists have this faculty; sometimes they haven't. At any rate, even though they sometimes do ask for effects that even the most ingenious trick-photographer can't supply—and often seem to go out of their way to avoid using simple photographic devices for putting over their points, they do try to see things more or less photographically. So, our story is adapted.

"And here is where the massacre—from the cameraman's viewpoint—begins. Copies of the script are sent to the set, costume, and casting departments. And each of these departments forthwith goes ahead to do brilliant work—too often with small consideration of each other, and still less of the cameraman and his problems.

"The Art Department reads the script over and leaps to its drawing-board to turn out a collection of architecturally brilliant sets.

"The Costume Department likewise proceeds to devise new and beautiful creations to bedeck the players.

"The results are truly wonderful—individually. Collectively they are atrocious. And the poor cameraman is supposed to

step onto the set and make the combination of these two look attractive on the screen! If he doesn't, everyone gleefully shouts that he is solely to blame. If he's lucky, of course, it is '**My sets**,' and '**My costumes**' that did it.

Of course the sets **are** beautiful. So are the costumes. But when you bring the two together, you often see that they were designed with little or no reference to each other. Their designers simply forgot—or overlooked—the fact that their creations had not only to be used together, but to be **photographed** together. To successfully meet this demand, the respective designers must not only cooperate with each other, but **cooperate individually and collectively with the cameraman**. Even if they don't know which particular cameraman is going to be assigned to the picture, they can at least consult some cameraman, who should naturally be glad to help them, even if it isn't his picture. And, to augment this, they should strive to become camera-wise. Too many art directors delude themselves into believing that they are camera-wise when they merely know (by rote) the angular differences between a 40mm., 50mm., and a 75mm. lens. Too many costume designers fool themselves the same way when they squint at their drawings through an old blue (ortho) monotone glass. The result, naturally, is that some morning the cameraman comes to work and finds himself confronted with impossible combinations of sets and costumes. One recent instance was of an unlucky fellow who was one morning handed a most beautiful set: an ultra-modernistic bar, all in black and white—mostly black. His star appeared in an equally striking costume—all black, while the men were so many shadows in black evening clothes. How he managed to photograph these and prevent their running together into a mere blur of black, even he doesn't know. But that was not the end for him: the next day, he found himself working on a beautiful, soft grey set—with his star also in beautiful, soft grey. Regarded as a business of matching the colors of set and costume, it was a decided success; but as a matter of providing an even **passably** photographic subject for the photographer, it was an abject fizzle. Viewed in retrospect, it's decidedly funny—until we consider how much valuable time was wasted in an effort to make these un-photographic combinations photograph even passably. Just a little intelligent, camera-minded cooperation could have prevented this difficulty and expense.

Thus far we haven't said anything about the directors, but these gentlemen are equally deserving of attention. When all the other factors are perfectly coordinated, the director can still make or mar the photographic perfection of his picture. When things are less perfectly organized, his power for photographic good or evil is vastly increased. First of all, everything depends upon the director's methods of action. If he is sufficiently camera-minded to see when the cameraman is up against such difficult problems as we have just spoken of, he can, if he will, help him tremendously. Supposing, for instance, that a director found his cameraman faced with such a combination of grey set and grey costumes, he could either increase the problem, or simplify it. If his attitude is that of Shakespeare's character who said, 'I am Sir Judge; when I open my mouth, let no dog howl!', he puts the cameraman (to mix our metaphors) 'on the spot.' If, on the other hand, he is willing to adapt his dramatic requirements slightly to aid the cameraman—by, for instance, playing his action far enough from the walls to allow an attempt at separation through lighting—he can help the cameraman out of the difficulty in which he has been placed. In other words, if he realizes, that only through increased cooperation can be alleviate the damage done by lack of cooperation on the part of others—and from which he must, in the long run, suffer quite as much as the cameraman—he can do a great deal to get good pictures of un-photographic subjects.

"Then there is another point where camera-wisdom on the director's part can improve photography. That is in the matter of the now popular moving-camera technique. This device

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Du Pont's New Film

(Continued from page 17)

No. 72	70
3 N 5	4.4
5 N 5	6.3
X 1	3.1
X 2	3.8

The new film is supplied regularly on nonhalation base. Three nonhalation features have been incorporated in this film; a stained emulsion, a light retarding undercoat, and a base, not backed but tinted throughout its entire body.

The new emulsion has developing characteristics similar to those of the former emulsion, and the usual developing technique now in use in the commercial laboratories is applicable to this emulsion. More care, however, is required in the safelights for handling this film. It is much more sensitive to green safelights and should, wherever possible, be handled in total darkness. Laboratory men who are accustomed to the handling of panchromatic film under the series III Wratten safelights should check the safety of the filters with a sample of the new film and reduce the level of illumination if necessary.

**New Schedule For Para. French Studio**

A NEW production schedule for Paramount's Joinville studio is being mapped out by Joseph H. Seidelman, home office foreign department executive, who is now in France, in conjunction with Robert T. Kane, in charge of the plant. Seidelman returns to New York the middle of next month. As Paramount is making all its French product at Joinville, the company is not disturbed by the new French law prohibiting importation of pictures dubbed outside of its borders.

The Baker Process

(Continued from page 14)

"The possibilities of the process are unlimited; it will accomplish anything possible by other processes, and in some instances, more. Especially is the freedom of movement greater. There is no necessity for cutting off the feet of the actors used in the foreground action, nor of showing the whole scene in closeups. The Baker process, alone, will permit the actors to actually walk into the scene, and up or down streets, steps, etc., in the process background, exactly as freely as though on a normal set. The process, of course, like all types of process photography, demands unusually precise machinery and accurate calculations of perspective between the foreground and background shots; the background plates, of course, must—as always—be free from weave, and rock-steady. These, however, are the unchanging requirements for all processes.

"In a word, I feel that the Baker Process, by virtue of its simplicity, its commercial components and its flexibility will prove a real and valuable addition to present-day process photography. In addition, through its economical operation, it should perform an added service to the industry, saving time and money for major and independent producers alike."

**New Screen Music Form**

A NEW form of musical technique known as "photographic music" will be introduced in Al Jolson's new United Artists picture, "The New Yorker," according to Joseph M. Schenck. The innovation is credited to Richard Rodgers and Lorenz Hart, composers. The music will run throughout the picture and constantly move with the story.

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AND YOU'RE HANDICAPPED WITHOUT IT

Put a Raytar on the nose of your camera and get a jump on the whole profession. Here's a new lens worthy of the best efforts of every cinematographer . . . a lens as superior to the ordinary run of lenses as sound films are to the old silents.

Raytar will give you results you could only **hope for** before. Its full, sharp covering power gets **full value** from every shot. No fuzzy film edges to distract the eye or distress producers. But clean, vivid images full of all the life and action the director planned.

Tests prove that the Raytar produces **more even definition over the entire picture area than any other lens now on the market**. Raytar is fully corrected and works with equal excellence under any light . . . and with any film. A special B & L glass insures the Raytar against tarnish or discoloration.

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Coordination

(Continued from page 24)

is, in its place, a very legitimate device for emphasizing dramatic points, and for smoothing out and accelerating the progress of a story. In its place, no one can find any fault with it. Unfortunately, however, since the cry has been raised for more movement in our pictures, this otherwise legitimate device has been greatly abused. Needless so, too, for in the final cutting, many of these perambulating shots have been found superfluous, and accordingly, been left on the cutting-room floor. In one film that was made recently, there was a particularly spectacular sequence of perambulator-technique. Viewed abstractly, as a piece of scenario-writing or direction it was most brilliant; viewed concretely, as a matter of photographic story-telling, it was ridiculous. In one scene, there were no less than twelve focus-changes, and innumerable light-cues, while the camera was supposed to poke its nose into every corner of the set, and do all sorts of weird acrobatics. The scene took nearly half a day to rehearse, and another to shoot; I'd hate to say how many gray hairs it gave the camera, sound and electrical crews. In due course it was photographed, and in due course the picture was cut and released—minus this wonderful perambulator shot, which was cut up into the individual close-ups and long-shots of which it was composed. Had the director and scenarist in this case been truly camera-minded, the scene would have been eliminated in the script—and before the company had wasted a day on photographing scenes, which could have been made separately in about twenty minutes. And—the photography of those individual scenes would have been vastly better. Each scene could have been lit and photographed to its best advantage instead of being sacrificed to make this 'brilliant' bit of cinematics possible.

"However, there are some camera-minded directors. We are impressed with the fact that some directors invariably manage to get good photography, even when working with inferior cameramen—and some others never manage to, no matter with whom they may be working.

"The cameraman certainly deserves this sort of cooperation from his associates, whether they do their work on the set with him or in drafting or executive offices. His work—even at its simplest—is the most difficult and intricate type of photography yet developed. This is so not merely because he is dealing with motion, rather than with static compositions, but because of certain basic technical limitations inherent in motion picture processes. A still photographer may make a picture: it may be good, technically, or it may be bad: at any rate, he has the beginning of a picture on his negative. The things that he can do to that picture between the development of the negative and the exhibition of his completed print are innumerable—and amazing. Leaving aside the more obvious tricks of retouching and multiple printing, the degree of control that he can exercise in merely the ordinary printing processes is tremendous. Is his negative too soft? He can correct that with a special contrast paper. Is it too contrasty? He has a special soft-contrast paper for that. Not only that—he has three or four degrees of each of these special papers; and if that isn't enough, he can play around all day, balancing print-timing, developing time and temperature, and even the formula of his developer, until he gets exactly what he wants. Furthermore, each print that he turns out is an individual thing; it is complete in itself, and need not match any other.

"The cinematographer, on the other hand, has no such control available. **Everything must be in the negative.** His only chance at control is in the actual making of that negative in his camera, and, to a limited degree, in the development of the negative—and there it is usually only in the matter of developing time. He has but one standard contrast of positive film upon which to print his picture. He can control his positive slightly—very slightly—by changing the intensity of the printing light. From then on, there is no control possible, as the print goes through a developing machine, which, un-

like the negative developing machines, allows no control at all. This is bad enough: but the most difficult part of his work is that each scene is not an individual picture, but part of an intricate whole. He may be many weeks or months photographing the various scenes for his picture, under all sorts of conditions ranging from the studio stages to the desert, the mountains, or even at sea on a boat, or high above the world in an airplane. **And every scene of his picture must perfectly match every other scene in the picture in photographic quality.** This, to put it mildly, is an unutterably difficult assignment—yet our cameramen today are fulfilling it ninety-nine times out of a hundred. And this with but pitifully little real, camera-minded cooperation from their fellow-workers in the other departments. The cameraman is generally more than willing to cooperate with his associates in the other production departments; years of experience have shown that. The truly successful cameraman realizes that his success depends on this cooperation—and the chap who refuses to cooperate, no matter how individually capable he may be, rarely attains or holds a particularly high place as a cameraman. Yes, the cameraman who is worth his salt is invariably willing to go out of his way to cooperate with his associates. He knows that motion picture photography is not a one-man job, but the product of many intelligently coordinated minds."

These statements depict practical experience in one studio only, but can be paralleled in practically any other organization or production unit.

The remedy for such unsatisfactory condition lies in the fact that proper coordination and cooperation is at present not "proper" and consistent for the reason, that no time is enforced or even countenanced for cooperation of the various departments **before their actual production activities start.**

Such pre-activity cooperation, known under the much dreaded name of "conferences" would to a great extent prevent later developing personal jealousies, and departmental strife, so-called buck-passing etc. and prevent the arising of a great many difficulties and embarrassing problems now confronting all departments active in the production of a motion picture.



New 16 MM. Company

PRODUCTION of 16 mm. pictures is the object of a new company formed by George Coudert and Arthur Levy, attorney. Offices of the new firm are at 521 Fifth avenue. Work will be done at the Paragon studio in Jamaica.



German Bars Down On Foreign Artists

THE bars that were put up on actors, writers and directors of foreign lands from coming into Germany to work have been let down by the Ministry of the Interior with no restrictions whatever on production people.

The strict film quota, however, is still in full force with little hope of any new provisions being created for the entrance of foreign product in any big block.

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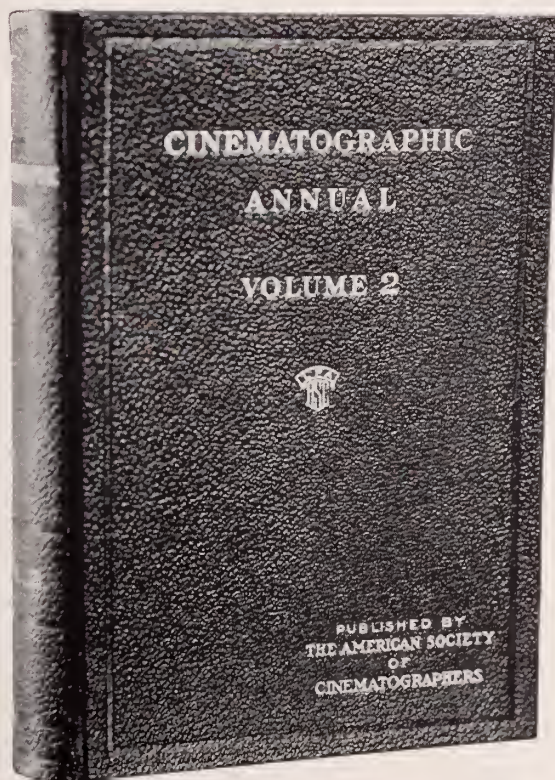
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Published in Hollywood by the

American Society of Cinematographers

(Camera Masters of the World)

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Personality in Portraiture

(Continued from page 7)

that of all of the many people whose portraits he had made, the most nervous and camera-shy was—Charles Chaplin. On the set, Mr. Chaplin—like many another star—is so completely immersed in his creative work that there is literally no consciousness of the fact that he is being photographed; his mind is completely absorbed by his characterization, direction, and so on. In the portrait gallery, on the other hand, he has nothing to think of except that he is being photographed. Naturally, he is nervous.

Knowing my sitter, I can not only chat amicably with him, and at least minimize his camera-fright, but, like a director, play upon his emotions and induce the mood and expressions that I desire.

There is, as well, a further disadvantage in the portraiture of actors and actresses; only too often, they want to appear, not as they actually are, but as they think that they are. Almost all comedians, for instance, are to some extent obsessed by the "I-want-to-play-Hamlet" complex; in portraits, they infinitely prefer to be made to look tragic, as though about to declaim, with a sigh, "To be, or not to be—." The woman, on their part, frequently want to be made to look like Garbo, or Ann Harding, or Dolores del Rio, according to their type. It takes diplomacy of the highest order to secure the pictures you want, while at the same time getting some that will suit the vanity of the sitter—and moreover, to secure fifty or a hundred (possibly more) different poses in the space of a half hour or so.



Mr. Bachrach at work in his studio.

In my own work, I prefer to rely almost exclusively upon lighting for my effects and compositions. Many excellent workers, I realize, employ settings and props to excellent purpose; but to my mind, this is an admission of weakness. The use of elaborate settings detracts from the picture; it makes the result more a pictorial design, with the figure more or less incidental, than a true portrait of a personality. Furthermore, editors prefer big heads, and are likely to trim portraits down to give them what they want—regardless of the effect of such trimming upon the composition.

Portraiture is very closely akin to cinematography. The cinematographer has very little need for accessories in the making of closeups; all he needs is a face and some lights and shadows. That, to my mind, is all that the portrait artist needs. Occasionally—but only occasionally—minor hand props are useful. Most important are a mastery of mood lighting, and the ability to bring out, through lighting, posing, composition, and applied psychology, the personality of the sitter. All of the portraits used to illustrate this article, for instance, were made with the same background; yet a wide variety of moods and effects were attained.

Mass production at once simplifies and complicates the problem. In my own department, I must frequently deliver the retouched negatives of a sitting to the publicity department within twenty-four hours of the time the sitting is made, together with sufficient contact prints and enlargements to serve the needs of this office. The negatives are shipped to New York, where further prints are made in a commercial laboratory for the use of the New York office. Therefore, my problem is much the same as that of the cinematographer on the set; a standard film, a standard development, a standard grade of printing and enlarging papers, all standardized so that the New York laboratory can get as good prints as I can. If diffusion is necessary, it must be introduced in the enlarging; my negatives must all be shot sharp.

But I have found neither this nor the necessity for reproduction to be in any way obstacles to using lighting as my principal tool. I try, of course, to make my light-effects reasonably well-defined, so that they will reproduce clearly; fortunately, such treatment, too, is usually best suited to making a personality stand forth forcefully. On the other hand, I do not believe that the flat lightings so often used by studio portraitists who are fearful of the limitations of the photo-engraving processes really lend themselves so well to reproduction. Certainly, they do not make for either distinctive pictures or forceful character-portraits. Therefore, to my mind, the successful motion picture portraitist—the one who alone deserves the appellation, "Artist," is the one who resolutely ignores the complaints of those who fear that, unless the portrait is flat and commonplace, it will not reproduce well; the man who strikes out boldly and makes his pictures pictorial portraits of personalities—not of people.

Small Sets

(Continued from page 12)

tion, and more exact work therein. But with but two or three days more time in preparation, the cost of the set construction can be reduced by half; the effectiveness of the finished production can be enormously enhanced, and production facilitated. The sole requirement is that those concerned in the preparation be truly camera-minded. After all, it is not words on a script that we are selling to the public, but pictures on a screen. Manifestly, then, the script must be essentially pictorial. It must be prepared, not by word-merchants, but by pictorially minded artists: men and women who can visualize action and setting as pictures rather than words. It would be well, therefore, for us to take a leaf from the book of the European producers, and make the preparation of the final script a matter to be handled not only by the writers and executives, but by the director, art-director and cinematographer as well. Each can help the other, and each must inevitably contribute greatly to the result. Each will do his work, too, with a clearly defined picture of what the ultimate result on the screen is to be. Then, and then only, will the full fruit of each man's effort be brought intact to the screen. Then only will our pictures be coherent units, made with one thought motivating every worker. And the result will be true motion pictures, predominantly pictorial, bringing to the screen the maximum value for the minimum expenditure.

STYLES *from* HOLLYWOOD

Fall Costumes



◆ At upper left is Joan Bennett, Fox star, wearing a blue crepe dinner gown and stunning coat with collar and cuffs of silver-tipped fox fur. Dark blue suede slippers and bracelets of blue crystal beads and rhinestones complete this Autumn ensemble.

◆ At upper right is Peggy Shannon, another Fox player, as she appears in her new Autumn formal costume—A nude satin with empire waist and form-fitting skirt modeled on bias lines. The gown is backless except for extended shoulder straps. The Eton jacket wrap trimmed with nude fox fur completes this costume.

◆ Lower left is Greta Nissen wearing a rough-weave white woolen jacket suit designed for Autumn afternoon wear. Her scarf is red and blue. The hat is an early fall vagabond type and the sandals and gloves are of white kid.

◆ Lower center shows Sally Eilers, Fox player, in a green and biege sports ensemble. The skirt is of biege chiffon rough woolen fabric. The green jacket is of same material. A blouse of biege crepe roma, beret of green French felt, belt of woven biege leather and gloves and sandals of biege kid complete the costume.

◆ Minna Gombell, Fox player, is shown at lower right wearing a black wool crepe and white chiffon velvet ensemble designed for Autumn. The skirt is gored and form fitting. The Eton jacket features a cape, edged with black fox.



Amateur Movie Making

by WILLIAM STULL, A.S.C.

8 mm. vs. 16 mm.

THE recent introduction of the revolutionary new eight millimetre film system has raised in many minds the question, "What is this new system going to do to the accepted 16 mm. standard?" The answer is simple enough; just what the introduction of the Brownie still camera did to the Graflex and the larger Kodaks. It was not so long ago that still photography was a hobby only for those who possessed both money and skill; the money to buy an expensive camera and the skill to operate it. Then came the little two dollar box camera and the famous fool-proof film in the yellow box, accompanied by myriad "photo-finishers" and the slogan "You press the button—we do the rest."

As a result, there are today two great classes of still photographers: the man in the street, snapshooting with his Brownie, and the advanced amateur, semi-professional and professional photographers seriously making pictures with their Graflexes, Deckrullors, Leicas and such instruments. The Brownie type of camera has created an entirely new class of amateur photographers; people who could not possibly have engaged in the hobby previously, but who can now—thanks to the simplicity and cheapness of the box-camera—enjoy the sport of picture-making.

The new Cine-8 system must inevitably do the same in the field of cinematography. It will open the doors to hundreds of thousands who could not otherwise afford to make movies, and, through this renewed impetus to the film and camera business, inevitably result in great benefits to the established 16 mm. system as the medium of the semi-professional, the scientist and the advanced amateur, for the snapshooter, now that 8 mm. with its lower cost and even greater simplicity is available, will hardly trouble with 16 mm. And that is entirely as it should be, for present-day 16 mm. apparatus is high-quality, precision machinery, and as badly wasted in the hands of a calloused snapshooter as would be a Graflex.

But because the new standard is intended primarily for mass consumption, it does not in the least follow that it is not high-grade apparatus. Quite the reverse! To seek a parallel in another field, there are few cars better designed or built than the Ford; yet it is made primarily for the masses, who cannot afford—and perhaps would not appreciate—such machines as the Rolls-Royce. Each has its place, and its distinctive clientele; so, too, the cine-8 and the more adaptable 16 mm. apparatus. The one gives you simplicity and rock-bottom economy; the other, precision-workmanship, detail refinements, tremendous adaptability and vast possibilities. For although many cinematographers fail to realize it, the best of modern 16 mm. apparatus will enable one to do almost anything professional 35 mm. cameras can—and to do some things (such as color cinematography) vastly better than is possible professionally.

So, all honor to the ingenious engineers who devised the new standard, and to the far-sighted executives who have sponsored it! They have, at a single stroke, opened the door to millions of new home-movie makers, and placed 16 mm. in its rightful place as the medium of the professional, the scientist, and the advanced amateur.

The Contest

While by no means all of the films entered in the AMERICAN CINEMATOGRAPHER'S Contest have as yet been received, they certainly bear out the last statement. 16 mm. is

capable of wonderful things, when used as intelligently as it has been by the majority of the contestants. It is not only a wonderful hobby and a means for making interesting photographic records of moving objects, but a truly artistic medium. I am constantly amazed at the ability and originality shown by the various amateur cineastes whose films have been received, for they exhibit not only artistic ability, but resourcefulness and a mastery of technique far beyond the ordinary meaning of the word amateur.

The time for entering films is now growing rather short; and as the summer is all but gone, I suspect that the majority of the films are already photographed, and now in the process of editing. Last month I made several remarks on editing, but space prevented any mention of the closely related subject of titles. Even as editing will make or mar a picture, so will titles. Titles, moreover, must be considered both from the standpoint of working and of visual effect; they must match the rest of the picture both as to literary and photographic mood.

Theoretically, the best picture is one with no titles—a picture in which everything is told pictorially. Actually, of course, this perfection is almost impossible of attainment. Even with the resources of the greatest writers, directors and actors, at the time when the silent film was at its peak of perfection, the perfectly pictorial film was a practical impossibility. Chaplin, not only the greatest pantomimist of our time, but the greatest all-around cinematic genius, was occasionally forced to use titles. The only 100% pictorial, titleless major production, "The Last Laugh," was never duplicated, while scores of lesser productions were literally saved from failure by the use of clever titles. Accordingly, it must be considered almost impossible to produce a successful titleless film, even with the aid of a Chaplin, a Jannings or an Erich Pommer.

Titles

The principal reasons for using titles are:

1. To explain the theme and purpose of a picture.
2. To identify and characterize the actors, the setting, and the time and place of the action.
3. To convey ideas which the pictorial action cannot or does not convey, as spoken dialog.
4. To cover lapses of time, changes of location, or breaks in continuity.
5. To save footage or production expense by substituting for scenes not shown.

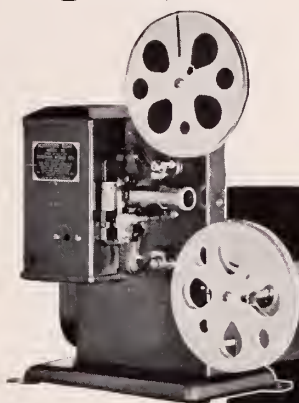
In some of these uses, titles are indispensable; in others, they can sometimes be eliminated. It is obvious that pictured action is more effective than the printed word. Therefore, when making films from a script or outline, never include a title where action or some visual device will suffice. Such pictorial devices are better than the best titles, and give subtlety to any production.

Wherever titles are used, however, they must be perfect. See to it that your titles are so worded as to be in perfect harmony with the balance of your production; and for heaven's sake, don't overwrite. Make the titles clear and concise; brief, but not telegraphic. Keep the wording clear, correct and understandable, without unnecessary slang or technical terminology. Dialect titles are hard to write, and harder yet to read—so avoid them. Likewise, go slow on the wise-cracks; humor is one of the fastest-changing phases of modern

(Continued on page 43)

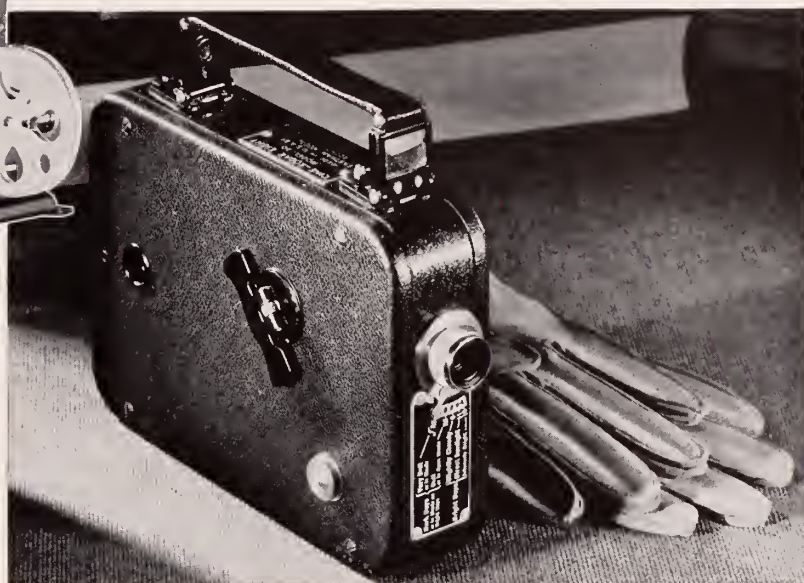
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Rochester, New York

The Elements of Makeup

by JAMES BARKER, M.P.M.A.A.

Part II—The Foundation

DISREGARDING the hair, which forms a separate topic in itself, a normal makeup comprises two main divisions: the base—grease-paint and powder—which gives the face the desired tone and texture, and the features—eyes, eyebrows, eyelashes and lips—which give the face character and expression. Each is equally important, though the latter, naturally, requires more skill in application.

The foundation of any makeup is, of course, the skin upon which the cosmetics are applied. While a properly applied makeup will conceal all ordinary blemishes or irregularities of skin-texture, the best results naturally follow the application of makeup to a clean and well-conditioned skin. Therefore, the first step in the application of any makeup should be a thorough and scientific cleansing of the skin. The exact methods of cleansing vary according to the type and condition of the skin: in some cases, simply washing with soap and water is all that is needed; in others, various cleansing creams are necessary. In applying makeups to men, the first requirement naturally is that the face be freshly shaven.

In cleansing the skin, always use a cleansing cream that is prepared from oils which penetrate deeply, so that the pores of the skin are not closed with any foreign matter which would either show on the surface, or cause a blemish later. In using the cream, do not rub the skin violently in all directions: pat it in. Then massage gently with the finger-tips, taking care to always rub upward, so as not to cause the muscles to sag. This method of application is in itself of great benefit to the skin: the patting brings to the surface a flush of blood which stimulates and invigorates the entire skin structure; the gentle massage flexes the tiny muscles, and helps them to retain their all-important elasticity. In this connection, please remark the fact that patting is at all times preferable to rubbing in the application of cosmetics. Not only is the ultimate effect upon the skin better, but the immediate result in the makeup applied, as well.

After the cream has been well patted into the skin, great care should be exercised in removing it. The best material for this purpose is a very soft cleansing tissue. These are cheap, so do not use them sparingly. It is false economy to try to make one tissue do the work of two or three; tissues saturated with cream cannot clean completely, and are likely to injure the skin. In using them, be sure that your movements are always upward, with large, firm strokes from the corners of the mouth up to the outside corners of the eyes, and back and forth across the forehead.

The next step is to wash the face thoroughly with a good facial soap and warm (not hot) water, being careful to rinse the face thoroughly. Most reputable facial soaps of today are satisfactory for this, as they contain good oils, and do not dry the skin.

The next step depends upon the type and quality of the skin. The pores, which have been opened in this cleansing process, must be closed before the application of the grease-paint. The exact means differs, accordingly as the skin is naturally dry or oily. If the skin is dry, I do not advise the use of an astringent. Ice, in most cases, will answer the purpose satisfactorily. If, however, the skin is naturally oily, an astringent should be used, as it will help to correct this fault. In applying the astringent, place a few drops in the palm of one hand, and then pat it into the skin with the finger-tips of the other hand. The skin should now be in perfect condition, and ready for the actual base of the make-up—the grease-paint.

Here we must begin to consider the shade of makeup required by the individual and the part, as well, too, as by the

type of film to be used. Except in special instances (such as an extremely tanned woman, or a pale man), it is axiomatic that men require a darker makeup than do women. Likewise, when faster film is used, a darker makeup is required for both men and women. Since most amateur cinematographers use regular Panchromatic film, we had best base our study of makeup upon the requirements of this emulsion. For regular Panchromatic film, therefore, the normal makeup for women is based on the No. 24 grease-paint, and that for men upon the No. 26, which is two shades darker. When Super-Sensitive Panchromatic film is used, we must move down the scale two shades more, using a No. 26 grease-paint for women, and No. 28 for men. In this way, the makeups will not only be satisfactory in themselves, but will balance with each other if (as is so often the case) the regular "Pan" is used for exterior scenes, and the "Super-Pan" for the interiors. In every case, of course, it must be understood that only the "Panchromatic" type of makeup products should be used.

In applying the grease-paint, begin by placing it all over the face in tiny dabs, so that the face appears to be covered with large freckles. Grease-paint should not be used prodigally, for too much will spoil the makeup. Once the grease-paint has been put on the face, the hands should be cleaned of all traces of grease-paint. Then moisten the fingers in cool water, and, with the fingers still moist, begin to spread the grease-paint with the finger-tips. The movement of the fingers in this should be upward, and from the center of the face outward. The finger-tips should at all times be kept moist, as the makeup must be carefully and evenly blended. Now pat the grease-paint in with the balls of the fingers until every tiny streak is eliminated, and you have a smooth, thin coat of makeup over the entire face. It is most important, of course, that the edges of the makeup—around the throat, back of the neck, and the hair-line, be extended far enough so that the camera does not reveal the end of the makeup. In the case of women, the shoulders, arms, hands, and other exposed portions of the body should be made up with liquid makeup and carefully blended with the grease-painted face. The application of this should be started at the neck, where the face makeup stops. It is applied with a stroking motion, then rubbed one way only until dry.

With the grease-paint properly applied, you have your face ready for what I sometimes call the "trimmings." These are the various applications to lips, eyes, eyebrows, eyelashes, etc., which combine to build the expression and character of the face. As I stated at the start of this article, these form a separate division of makeup, and so I will consider them in a separate article. After they have been applied, the powder should be; and the powder merits consideration here, as it is complementary to the grease-paint.

It is the powder which completes the smooth, even skin-texture which the makeup is intended to supply. The exact shade of powder to be used should be, in the case of brunettes, the same as that of the grease-paint; in the case of blondes, one shade **darker** than the grease-paint. That is, taking our basic shade for regular Panchromatic film, No. 24 grease-paint for women, No. 24 powder for a brunette, and No. 25 powder for a blonde.

In applying the powder, the first movement is to dust evenly (patting, of course) a heavy coating of powder all over the face, covering the lips, patting over the eyelids, and patting carefully over the hair line. If there are wrinkles around the eyes, pat again over them, drawing the wrinkles apart. Now that this has been done, continue patting all over the face until the grease-paint has absorbed all the powder it can. Next

(Continued on page 35)

Selecting Your Subjects

by **HAL HALL**

AFTER viewing many thousands of feet of amateur films this writer has come to the conclusion that a very large number of 16 millimeter enthusiasts are wasting most of their film, and, at the same time, must be spoiling a great deal of the pleasure that they might derive from their picture making. Perhaps, this is why you see so many used 16 millimeter cameras and projectors on the market. Apparently, they are purchased as a new toy; the user looks at his film on the screen a few times—then decides that he doesn't want to play with it any longer.

This writer would not blame some amateurs he knows if they did become disgusted and quit the rather expensive pastime of motion picture making; especially, after they look at some of the intelligently-made pictures that many of our amateurs produce.

The chief fault with most of these "snap-shooters," as we call them, is that they do not seem to give any thought to the selection of the subjects to be photographed. One of the writer's friends returned from a trip to Bermuda recently. He brought back many hundreds of feet of film that he had shot both in Bermuda and on his journey across the continent. "There," he exclaimed, when the last scene had flashed across the screen, "I guess that covers my trip pretty well." We agreed with him, because to have done otherwise would have broken his heart. But about two weeks later he dropped into our office and said that he guessed he wasn't much of a picture maker. It seems that he had just seen three rolls of film from Bermuda, which a friend of his had made. Our friend didn't know that there were such scenes in Bermuda as his friend had photographed.

My friend had merely aimed his camera at the usual scenes which the majority of unthinking beginners shoot and had forgotten to look for the unusual scenes which may be found if one is willing to spend a little time searching. For example, my friend had a lot of scenes at the wharf showing crowds of people landing from the boat. He had other scenes of the principal street in Hamilton. He had long shots and panoramic shots of lily fields and shots of the band playing on the lawn of the Bermudiana hotel. All good enough in their way; but his friend had spent a little time picking his shots. He had gone out with an eye for human interest and he found it, not among the crowds of tourists, but in the home and on the little farms of the inhabitants of that beautiful garden spot. Intimate closeups of natives at work and at play, shots of native homes, made from intelligently thought out angles, and framed with an eye to composition: these were among his scenes. And then, there was a shot showing a policeman directing traffic; the "traffic" was one man on a bicycle. The unfortunate cyclist turned the wrong way and received as tough a bawling out as do we when we make a left turn on a crowded city street in the face of a sign forbidding it.

My friend's friend had photographed some of the beauty spots in kodachrome. And there are some gorgeous scenes in Bermuda. He had hunted out the best and had photographed them with rare ability and thought. He had a close shot of a banana tree in bloom—this in kodachrome. He had another shot of a man and wife arguing in front of a liquor store. The wife apparently won, for the couple marched angrily away without the man's entering the store. The photographer must have had a keen sense of something or other, for he apparently waited for further developments. The next scene showed the same husband approaching the liquor store alone. Furtively, he glanced over his shoulder and then ducked inside the store. When he came out he had a package under his arm and a smile on his face. Just a little human-interest

touch that gives a real laugh. These are just a few examples of getting shots that will be worth while when the trip is ended and the picture is cut and titled and ready to show to your friends.

As an example of worthwhile amateur picture making, I might point out the work of another friend who was on a trip down in Africa. Like most amateurs, he photographed hither and yon and had just another mess of shots that really meant little. Then he decided to get serious for a while. He went inland and found a native village. There he arranged with the head man to make a record of how they lived. He started out in the morning and carried them through the day with the result that he has one of the most interesting and worthwhile pictures I have seen. His picture really is good enough to be used to great advantage as an educational subject, and schools would find it a valuable addition to their film libraries.

During the Olympic Games which recently closed in Los Angeles, a number of my friends shot hundreds of feet of film. It is amazing to see the different results obtained. Some of them used but little film but secured a remarkable record of the games. Others "just shot" hundreds of feet which means but little. Of course, the big crowds were a real part of the event, but some of my friends seem to have devoted more footage to rapidly moving panoramic shots of the crowds than to the actual athletic events which really were the games.

The same is often true in photographing football games in the Autumn. So many amateurs devote so much time to photographing crowds that they miss the exciting plays that are really worthwhile. If you are at a Harvard-Yale football game it would seem that the thing to photograph would be the game. Crowds may be seen anywhere and any time. But if a dinky little quarterback breaks through the entire opposing team and dashes eighty yards for a spectacular touchdown—that is the thing that will thrill you later when you throw your picture upon the screen.

Some amateurs go to the most beautiful of our National Parks and come home with a lot of film showing the auto camps and the camp restaurants and panoramic shots of the park that have been made with so little care that you think these parks are merely auto camps and eating places. While others bring out the most beautiful examples of photography one would ever hope to see. Only recently I had the opportunity of seeing two such amateur films. One was the messy sort and worth nothing. The other was an inspiration and a delight to the pictorial eye. One man had photographed the geysers in Yellowstone Park. On his film they were just geysers. The other had photographed the same geysers. And what pictures he had made! He waited until he had beautiful cloud banks in the background, and as the geysers spouted and formed their magnificent effects they were enhanced by the simply gorgeous cloud backgrounds. One man had used filters to good effect. The other didn't use filters, and at times was out of focus. In years to come the man who made the fine pictures will continue to enjoy them and so will his friends. But the other amateur will soon toss his pictures into the ash can—and probably will relegate his camera to the cellar or store room.

There is so much that can be done with the 16 millimeter camera; so much that can be secured that will make the amateur happy, that it is a constant wonder to me why more of the amateurs do not plan out their shots and make pictures of which they will be proud.

Morganacolor

by **WILLIAM STULL, A.S.C.**

THE recent introduction of the Morganacolor process for 16mm. natural color cinematography has aroused considerable interest among both amateur and professional cinematographers—and also no little confusion as to the relationship between the new process and the established ones, and as to its purpose. According to its sponsors, the Bell & Howell Company, however, there is really no conflict between Morganacolor and the already well established Kodacolor process, for which Bell & Howell have long been licensees. The truth of this statement is clearly seen when one examines the two processes critically, and makes practical tests of the two.

Before discussing this, let us recapitulate, and consider the principles of natural color photography. There are, it will be remembered, but two basic types of color-film process: additive, and subtractive. In the subtractive processes, the color is actually in the film; in the additive processes, the film is itself a more or less conventional black-and-white film, taken and projected through special filters which synthesize a colored image upon the screen. The professional processes—Technicolor, Multicolor, Magnacolor, etc., are subtractive; the amateur processes—Kodacolor, Vitacolor, and now Morganacolor, are additive. Each of these types has distinct advantages and disadvantages: briefly, the subtractive processes make for greater simplicity in projection, but introduce serious complications in the laboratory processing; while the additive processes add some degree of complication in projection, but allow conventional methods of processing the film.

Further than this, all color processes may be classified with respect to the number of colors used to form the completed color-image. It is well known that white light is composed of rays of every color, and that it can be synthesized by combining rays of three or four primary colors—generally red, blue, green and yellow. Natural-color cinematography makes use of this fact by making (in one way or another) separate pictures of the subject through filters excluding all rays but one of these primary colors, and then projecting the pictures through filters of the proper primaries. In this way, not only may pure white light—the combination of all the primary colors—and its opposite, black—the total absence of any light—be produced, but also the color-effects of the primary colors and of many of their combinations, such as orange (yellow and red), violet (blue and red) and so on. Now, the perfect color process would be one employing all of the primary colors; but this would introduce a vast deal of complication. Therefore, it has been found possible to achieve very creditable effects with but two or three colors. Naturally, of course, the fewer colors used in synthesizing the completed color-image, the less perfect will be the coloring of all but objects of the exact colors used; in some cases, there will be colors which cannot be reproduced at all (vide, orchid, which cannot be photographed successfully in Technicolor), while in a number of other instances, the rendition of some colors will be false. Likewise, using but a part of the components of white light, the rendition of white will inevitably be imperfect.

All of the professional color processes to date have been two-color processes—Technicolor, Multicolor, Magnacolor, Prizma, Kinemacolor, and the like, with the exception of the long-forgotten Gaumont process, which is a three-color one. Kodacolor, the leading amateur process, on the other hand, is a three-color process. Morganacolor is a two-color process.

This brings us back to a consideration of the two amateur contenders. In order to understand their relationship, we must first have a clear mental picture of how each works.

Kodacolor is a three-color, additive process. It is made with a special tricolor filter, having parallel segments of blue, green

and red. A special film is used with this process, a film which is reversed in the camera, being run with the emulsion away from the lens rather than toward it. Embossed in the celluloid base of the film are tiny cylindrical lenses, microscopically narrow, but running the entire length of the film. These tiny lenses split the image cast by the camera's lens up into tiny vertical strips, corresponding to the strips of the vertical Kodacolor filter-segments. When the film has been reversed into a positive, it is run through a projector fitted with a similar filter, and the tiny lenses on the film, in conjunction with this projecting filter, re-form a colored image on the screen. The color rendition of this process is practically perfect, but it is limited by the fact that, since the optical system is necessarily an interlocking system, only a special 1-inch f:1.9 lens may be used in either taking or projecting. Due to the density of the filters, the speed characteristic of the Kodacolor system (even with the new Super-Sensitive Kodacolor film) is extremely low, and the projection is limited to a relatively small screen.

Morganacolor, on the other hand, is a two-color, additive process. It is made with a special Filmo camera, equipped with a mechanism which alternates a red and a green filter in front of the film, exposing one frame through each filter. These filters may be removed if it is desired to use the camera for either black-and-white or Kodacolor work, and they may likewise be changed at will to compensate for different types of film or light. At present, the only filters available are those for Eastman Regular Panchromatic Reversal Film, separate filters being available for both daylight and incandescent light. The film is projected through a special Filmo projector, which is equipped with a rotating color-wheel in front of the lens, and fitted with projection-filters complementary to the taking filters. In order to minimize the color-flicker (technically known as "color bombardment"), which inevitably results from this type of process which depends upon persistence of vision for synthesizing the complete color-image, the projector is operated at the high speed of 72 frames per second. But, in order to conserve film, a most ingenious movement has been developed, which, while in effect projecting at 72 frames per second, actually passes but 24 frames per second past the aperture. This is done by moving the film both ways: down two frames, then up, one frame, and projecting each frame three times. This eliminates color bombardment, but cannot eliminate another inherent liability in this type of process: fringeing. It can be clearly seen that if a motion picture is made of a rapid movement, moving across the picture, and fairly close to the camera, the displacement of the object between one frame and the next will be relatively great. Now, if one of these images is projected through a green filter, and the next through a red one, the two images will not completely "register" one on top of the other. Since the displacement will be magnified, too, in the projection, it will be more noticeable. Therefore, on such rapid movement close to the camera, you will always get a colored fringe around the moving object—green on one side, red on the other, while in the centre, where the two images do overlap, you will get a proper rendition of the object's color. The rapidity of projection in Morganacolor minimizes this fringe, but cannot altogether eliminate it.

Since the color-forming components of the Morgana process are not in any way dependent upon the optical systems of taking and projection, it can be seen that any lens desired may be used in either photographing or projecting Morganacolor films. Since the film itself is not a part of the optical system, duplicate positives may also be used quite success-

fully in projection. Since the filters are relatively light, the speed factor is comparatively high, while the size of projection is practically unlimited. On the other hand, being a two-color process, the color effects cannot be in any way comparable to those of a three-color process.

To summarize the matter: Kodacolor is a three-color process, giving practically perfect results at the cost of speed, projection-size, and interchangeability of lenses; Morganacolor is a two-color process, giving excellent results within its limits, but not in any degree approaching the perfection of a three-color process. It gives, however, a far greater speed characteristic, and perfect flexibility in lenses, projection, and allowing the making of duplicate prints. The one is admittedly superior in color-rendition, and inferior in mechanical flexibility. The other is admittedly inferior in the perfection of its color-rendition, but vastly superior in its mechanical applicability.

Now, what are the purposes of the two?

Kodacolor is primarily an amateur process. The small projection-size imposed, and the impossibility of making commercial duplicates practically bars it from the commercial field. But it is unquestionably the most perfect color process for amateur use, if one is willing to accept its mechanical limitations.

Morganacolor, on the other hand, is adapted to both amateur and professional requirements. It is neither able nor intended to give coloration as perfect as can be obtained from a three-color process: but it is more flexible, and by virtue of its permitting the use of duplicate positives, it is eminently fitted to commercial use. Morganacolor, therefore, is intended for the use of the amateur who wants to make color films with the same flexibility as is possible in black-and-white, and for the commercial field, where there is already a definite demand for 16mm. color. Despite the unique reciprocating movement of the film at the projection-aperture, the process is absolutely applicable to sound-on-film.

Considered strictly on their own merits, the results possible with the Morganacolor process are eminently satisfactory. I have made a number of practical tests with the process, some under extremely adverse conditions, with excellent results. Unlike Kodacolor, the increase in exposure necessary for Morganacolor work is relatively slight. Using natural light, the increase in exposure over black-and-white (using the same film and camera) is approximately two and a half stops. With artificial lighting (which is practically impossible with Kodacolor), the increase is but one and a half stops. In this latter connection, one of the most interesting of my series of tests was one made, through the courtesy of Mr. C. B. deMille and Karl Struss, A.S.C., on an interior set at the Paramount Studio, where Mr. deMille was filming "The Sign of the Cross." Mr. Struss, of course, was using Super Sensitive film, while I had to use ordinary Panchromatic: but by virtue of the decidedly faster lens and larger shutter-aperture of the Morgana-Filmo, I was able to get very passable results, despite the filters used for the color process. Had I been equipped with Super Sensitive film (the Morgana filters for this emulsion will, I understand, be available shortly), I should have had, beyond doubt, an absolutely perfectly-exposed picture — a feat which no other process of color-cinematography, amateur or professional, could equal.

The general color-rendition of Morganacolor is excellent. It reproduces all shades of red and green, naturally, perfectly: and, despite the fact that it uses only these two colors, and no blue, it reproduces blue very creditably. Such two-color processes are frequently very faulty in their reproduction of yellow: Morganacolor, on the other hand, reproduces this color, while by no means perfectly, at least creditably. Its yellows and oranges, while far from true, are at least recognizable, though somewhat greyed. Both by natural and artificial lighting, it gives beautiful flesh-tints, and almost perfect whites.

The making of Morganacolor films is by no means difficult. The camera is, aside from the special filter-alternating mecha-

nism, a standard Filmo, with the speed-control of a 70-D, but without the turret lens-mount. It is operated at a speed of 24 frames per second, in order to minimize the fringe; it may in certain cases be operated at slower speeds, though this is not advisable, and it may, of course, be operated at considerably higher speeds. Any lens may be used, from a 15mm. up to the most powerful telephoto. The best results, naturally, are to be had with lenses that are well corrected for color. The speed of the lens is no more or less important than in the case of black-and-white work: the slower lenses will, of course, prohibit the making of color pictures under adverse conditions. Like any standard Filmo, the Morgana camera can be used in the hand, although, of course, the best results naturally follow the use of a tripod. Due to the unavoidable tendency toward fringing, it is not advisable to pan or move the camera quickly. However, good cinematographers always avoid moving the camera wherever possible. As remarked before, rapid movement across the camera tends to produce fringing; but ordinarily movement is permissible. Even comparatively rapid movement is possible if the subject is beyond ten or fifteen feet from the lens. Rapid movement in closeups, of course, is always objectionable, whether in black-and-white or color. Every type of lighting possible in black-and-white is possible in Morgana, but, as in all color processes, a fairly flat, front light is the best. As in most color processes, the question of exposure has a definite bearing on the color-rendition; over-exposure is highly objectionable and a slight underexposure is in every case preferable. The best results, of course, follow the use of an accurate exposure-meter.



The Elements of Make-up

(Continued from page 32)

take a soft powder brush and, starting at the forehead, brush from the center of the face, out, until all of the superfluous powder has been brushed from the face. Next, take a cleansing tissue, dampen it, and clean the powder out of the eyelashes, the corners of the eyes, and over the eyes, just by pressing gently. Now clean the powder from the lips with the tissue, and, with your finger, go over the lips with a little more rouge. Take the eyebrow brush and brush the powder from the eyebrows. Then you are ready for the camera.

While you are working before the camera, it will frequently be necessary to repowder, in order to preserve the velvet-smooth surface of your makeup. Do not, however, make the mistake of over-powdering, as many professional players do. It is always well to glance into a mirror to check on your makeup before each scene—but do not feel compelled to repowder each time you do so.

Grease-paint—and all other makeup, for that matter—may be removed by a liberal application of cold creams, followed by a liberal massage, to dissolve the grease-paint. The cream should, of course, then be removed with a cleansing tissue. Finally, wash the face well with warm water and plenty of soap, followed by a cold-water rinse. Liquid makeup, incidentally, requires only this latter soap-and-water treatment for removal.



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HOLLYWOOD

Concerning Cinematography

(Continued from page 20)

France; but its nature is most correctly described by its main title, which calls it "Une etude cinematographique"—a study in cinematography. For this, Mr. Edward Tisse, who will be remembered for his photographic achievements in the other Eisenstein films, deserves unusual credit. Every scene is superlatively beautiful. Since the sound-track of the picture—a song—is entirely in Russian, it is Tisse's photography that carries the picture; and it is significant that at every showing of the film during its four weeks' run at the Filmarte theatre in Hollywood, the audience greeted its close with a storm of applause. We have heard a great deal about Mr. Eisenstein, but not nearly enough about that tall, silent Scandinavian, Edvard Tisse, who has done so much to make Mr. Eisenstein's productions the noteworthy things they have been. When he visited Hollywood a few years ago, Tisse made many friends among the A.S.C.; and this picture has strengthened their esteem for this great artist.

DOCTOR X

◆ Expertly Technicolored by Ray Rennahan, this picture is a further—and convincing—argument for the use of more color in feature productions. The less said about the story and direction, the better; except for some execrable "comedy relief," these are no better nor worse than the average horror-melodrama: it is Technicolor and Rennahan's photography alone which make the picture notable. It is to be hoped that more producers will follow Warner Bros.' example, and decide to make their mystery pictures in color, and entrust the photography to Rennahan—or some equally expert color-cinematographer.

MY PAL, THE KING

◆ This Tom Mix Western is another of the four pictures which Universal has seen fit to release minus all screen credit to the photographer. On the face of it, this is a glaring injustice to Daniel B. Clark, A.S.C., the cinematographer in question. But after having seen the picture, I am convinced that Universal unwittingly did Clark a favor in not permitting his name to be connected with the picture, for "My Pal, The King" is a quickie of the quickies. It seems incredible that any major producer should have the supreme effrontery to present one of their major stars in so shoddy a production. There is a great idea in the story—but it does not reach the screen. I do not believe that there was a single new set built for the production; certainly I saw and recognized many dating back to the long-dead days of "The Hunchback of Notre Dame." Even Dan Clark's best efforts could not make this film look like anything more than it is—a quickie, made strictly for the purpose of exploiting a popular star while the exploiting is good. It will make money on the strength of Mix's name, I suppose, but not nearly as much as it would if it had been produced in a manner commensurate with the star, and with the basic idea of the story.

GUILTY AS HELL

◆ Here again we see Karl Struss, A.S.C., working in his "Jekyll and Hyde," or realistically unpictorial mood. His work is effective throughout, but impaired by a technical abuse which seems inconceivable in Struss, or in a director who, like Erle Kenton, is a former photographer. Time and again big-head closeups are made with a 25 mm. lens—frequently dollyng into the closeup from a long-shot. The result is atrocious; so distorted as to make the player appear principally nose, with a small, absurdly tapering head somewhere in the background. The first time this trick is used—during a third degree sequence—it is effective, and almost legitimate; but once in a picture should have been enough. Instead, Kenton and Struss cast good taste to the winds, and use it continually. They should have known better.

Dyer Covers Olympic Games

ELMER G. DYER, A.S.C., claims the distinction of being the only production cinematographer to photograph the entire Olympic Games. Mr. Dyer was in charge of a special camera crew engaged by the well known French director, E. A. Dupont, to make a complete photographic record of the games. Associated with Mr. Dyer at different times during the making of this film were such outstanding cinematographers as Jackson Rose, A.S.C.; Charles Stumar, A.S.C.; and Harry Perry, A.S.C. Between them, they covered every event of the Olympiad, and exposed more than 43,000 feet of films to do so.

"It was a most interesting experience," says Mr. Dyer. "The thrill of a lifetime. But it was real work, at the same time! I can surely sympathize with the newsreel men now. We had to be, it seemed, in three or four places at once—up in the press box at the top of the stadium, down on the field recording the different events, getting closeups of the winners at the Victory Ceremonies, over at the swimming stadium photographing the aquatic events—and almost everywhere else. Working in a crowd of a hundred thousand people isn't easy, either; whenever we wanted to move the cameras, we could be sure of having to shoulder our way through a few hundred tightly packed spectators. Once, the crank of my camera, as it was being hurriedly carried out by my assistant, Jimmie Williamson, became entangled in the neck of an ice-cream vendor. Yes—we carried the chap with us, and got our shot! We also got some ice cream and a good old American Razzberry from the crowd.

"I hadn't imagined that there could be so many amateur still and movie photographers in the world. They were everywhere—and fully half of them came around to us for advice on exposure, focus, film, filters, angles, and everything else from here to breakfast. We really enjoyed talking shop with them—except when they started to talk just as we were about to move to the other end of the stadium to get a shot in a hurry!

"We used both Akeley and Mitchell cameras, and every possible lens from a 1" to a 17". The latter, by the way, were extremely useful in getting 'candid camera' shots of the crowd in the stands. Photographically speaking, we handled the job exactly as though we were on production, using Super Sensitive film and moderate filters—usually the Aero 2 and G. The results were beautiful—especially the slow-motion shots we made of the diving.

"But I'd rather not try it again—concentrating on photography during the finals was an awful strain. We had followed all of the events through the elimination heats—and watching the finals, knowing that each contestant was a champion, and all of them the world's best, well, it was almost impossible to concentrate on the camerawork.

"The newsreel fellows are a wonderful bunch. We worked together perfectly, borrowing each others film, lenses and lunches as freely as though we were brothers. And, like brothers, how we would bawl each other out when we got in each other's way!"

Talking Picture on Forest Fires

A SHORT talking picture entitled, "Forest Fires—or Conservation?," sponsored by the Forest Service, and designed for use during the fire season in the Northwest, has just been released by the U. S. Department of Agriculture. This film shows the Secretary of Agriculture, Arthur M. Hyde, presenting to Congressman Scott Leavitt, of Montana, a commission as a Volunteer Fire Warden in his state and presents Mr. Leavitt in a short talk on the importance of forest conservation, illustrated by various scenes exemplifying forest resources and the destructiveness of their arch enemy, fire.

This film, three-fourths reel in length, may be obtained from the Office of Motion Pictures, U. S. Department of Agriculture, Washington. No rental is charged, but the borrower is required to pay transportation charges.

Here and There in the Industry

35-HOUR WEEK?

◆ Joseph M. Schenck is reported in one of the trade papers as predicting a 35-hour working week in the Hollywood studios. Says that producers are considering this plan from an economic point of view, and as a means of restoring prosperity. Says studios will have to run on a two-shift basis if this policy goes into effect. Might be a good idea if more men are employed.

LIKE FATHER, ETC.

◆ When Rin Tin Tin died recently it looked as though Nat Levine's plans for four features with the famous dog in the top spot would be shattered. However, Rin Tin Tin, Jr., has inherited his father's ability and is stepping into the dog role in this series which will be released by Mascot.

SPEED

◆ Director James Cruze has just set a new record at Columbia where speed has long been in evidence. He completed the shooting of "Washington Merry-Go-Round" in sixteen days. What a difference from the old silent days when a six to nine week schedule was considered perfectly okay.

MAMOULIAN TO EUROPE

◆ Rouben Mamoulian, Paramount director, who has made an enviable reputation in the short time he has been in pictures, has left for a vacation in Europe. He plans to visit England, France, Germany and Austria before he returns in late October to resume work at Paramount.

KERSCHNER TO TAHITI

◆ Glenn Kerschner, A.S.C., and Director Irvin Willat, have gone to Tahiti where they are to secure scenes for Universal which will be used in connection with the making of the picture, "Black Pearls."

2000-FOOT REELS

◆ The Academy of Motion Picture Arts and Science is trying to put over a plan whereby release prints will be on 2000-foot reels instead of 1000-foot reels as at present. This is for the purpose of saving wear on films by so much handling. Some of the big eastern exhibitors are said to be favoring the idea.

Consolidated Opens New Plant

A NEW \$2,000,000.00 plant has been opened by Consolidated Film Industries, Inc., on Main Street, Fort Lee, N. J. It is called Consolidated Park. The new plant will have an annual capacity of more than 1,000,000,000 feet of release printing. Safety features endorsed by the government and insurance authorities furnish the highest possible protection for life and property. There is a large research laboratory with a staff of skilled technical engineers.

Negative Exports Increase

A MARKED increase in the shipment of negatives abroad and having the positive prints for foreign release made there is shown in the past six months, according to government reports. During the first six months of this year a total of 6,553,734 feet of negative sound film was shipped as against 5,488,917 in the same period last year, or an increase of about 20 per cent. The United Kingdom was the leading market, receiving 2,815,323 feet.

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Amateur Movie Contest

In addition to the four cash prizes, announced on the opposite page, the following prizes will be awarded by various equipment manufacturers and dealers:

The BELL & HOWELL COMPANY will also present two equipment prizes—First, a choice of a Filmo 70DA Camera, listed at \$280.00, or a Filmo Model J. L. Projector, listed at \$298.00. Second, a choice of any Standard Cooke Telephoto Lens, priced from \$60.00 to \$95.00. To be given to prize winners who made their pictures with a Filmo. The EASTMAN KODAK CO. will present a Model K Cine Kodak, with a f. 1. 9 lens, complete with carrying case, priced at \$150.00, for the finest example of photography in an out-of-doors picture regardless of whether it wins a cash prize or not and without consideration of story subject. MAX FACTOR MAKEUP STUDIOS will present one of the famous Max Factor Make-up Kits, completely equipped, to the winner of first prize of \$500.00. HOLLYWOOD FILM ENTERPRISES, INC., offers a Model B Cine Voice, Home Movie Talking Picture Machine, complete with carrying case, priced at \$129.00, to be given to that person or Amateur Club, located in California, who enters the best 16 mm. or 9½ mm. picture from California, regardless of whether the picture wins a cash prize or not. In other words, the prize goes to California's best entry. This home talkie equipment may be attached to all projectors, either 16 mm. or 35 mm. It makes any projector a talking picture machine. HOME MOVIE SCENARIOS, INC., offers two prizes as follows: To the winner of first prize of \$500.00, one Scenario (choice of entire group), one H.M.S. Matte-box, choice of any H.M.S. Filter, and one H.M.S. Scene Slate. To the winner of second cash prize of \$250.00, one H.M.S. Matte-box and choice of any H.M.S. Filter. In case the picture winning first prize is made from an H.M.S. Scenario, an additional cash prize of \$100.00 will be paid by Home Movie Scenarios, Inc. If second prize is made from an H.M.S. Scenario, an added prize of \$50.00 will be awarded; and an added prize of \$25.00 will be given winner of third prize if made from an H.M.S. Scenario. METEOR PHOTOLIGHT COMPANY will present the winner of FOURTH cash prize the following valuable lighting equipment: A Meteor Double Photolight complete with two 500 watt NERON bulbs, retail price, \$30.00, a Meteor Photolight Tripod model, complete with NERON bulb, retail price, \$18.00, and a Meteor Photolight Table model, complete with bulb, retail price \$13.50. Value of prize, \$61.50.

AND—MORE PRIZES WILL BE ANNOUNCED

YOUR OPPORTUNITY!

The AMERICAN CINEMATOGRAPHER now offers the greatest opportunity ever given the AMATEUR MOVIE MAKER to win recognition and cash. ¶ A total of **\$1,000.00** in **CASH** prizes is offered by this magazine to the winners of the Amateur Movie Making Contest announced in the October issue. This contest is sponsored by the American Society of Cinematographers, an organization composed of the world's leading professional motion picture cameramen. If you want to win recognition, as well as cash, read the rules below and send your entry. (See opposite page for additional equipment prizes)

COMPLETE RULES OF THE AMATEUR MOVIE MAKING CONTEST

The American Cinematographer will present a prize of \$500.00 for what its judges consider the best 16 millimeter or 9½ millimeter picture submitted in this contest. \$250.00 will be given as second prize; \$150.00 as third prize; and \$100.00 as fourth prize, a total of \$1000.00 in prizes.

This contest is open **ONLY** to **AMATEURS**. No professional cinematographer will be eligible to compete. It is a contest solely for the amateur, either the individual or the club.

The contest officially opens November 1, 1931. The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after

the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they **MUST** BE photographed on 16 millimeter or 9½ millimeter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

American Cinematographer, 1222 Guaranty Bldg., Hollywood, Calif.

Enclosed please find Check, or Money Order, for \$3.00 (\$4.00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year:

Name.....

Address.....

It is understood that this subscription makes me eligible to enter your \$1000.00 Amateur Movie Contest.



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A New Exposure Meter

LIGHT intensity measurement has been placed on the same basis as the measurement of amperes or volts by the Weston Electrical Instrument Corporation, using their newly developed Photronic Photoelectric Cell. The latest use to which they have placed this electric eye, is a Universal Exposure Meter for photographic use, in which brightness measurements are taken directly from the scale of an instrument easily read by the layman.

This Exposure Meter is scientifically designed to give accurate exposure information for both "stills" and "movies." It consists essentially of two parts, (1) an electrical instrument operating from two Photronic Photoelectric Cells located in the back of the meter and (2) a simple, novel mechanical calculator for translating the brightness measurements into proper apertures and shutter timings for any plate or film speed. It is always ready for use as no batteries are required and no adjustments necessary. It is independent of climate conditions and intensity of light.

Academy Appointments

APPOINTMENTS of leading motion picture technicians to head sub-committees of the Research Council of the Academy of Motion Picture Arts and Sciences, to carry out projects instituted at its first meeting last month are announced by Darryl Zanuck, chairman.

The chairman of the groups and the subjects they will investigate are: Virgil Miller, development of a noiseless camera for recording sound pictures; Carl Dreher, standardization of set and costume tints; John Nickolaus, uniform release print practice; W. C. Marcus, release print film processing investigation; C. Roy Hunter, film preservatives investigation; Douglas Shearer, screen quality study; E. H. Hansen, split film recording investigation.

The Academy's Research Council was organized recently as the governing body for technical investigations and standardizations within the film industry. In addition to consolidating the work of previous Academy groups devoted to technical research, the new body will investigate technical problems affecting actors, writers and directors.

The Council is composed of representatives of the technical departments of the major studios and of the acting, directing, production, technical and writing branches of the Academy.

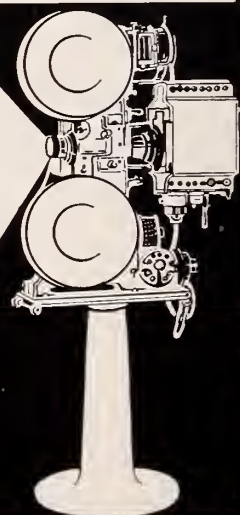
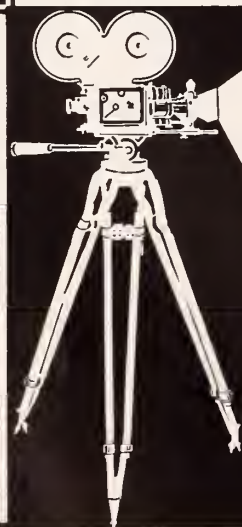
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Wins Leica Camera



KARL DRAXLER, of 3511 South Olive Avenue, Burbank, California, was presented with a new Leica camera last month by the Hollywood Camera Exchange, which offered this prize for the best still photograph made in connection with the Olympic Games, which is shown above. An intensive campaign over the radio was conducted by Cliff Thomas, head of the Exchange, and hundreds of pictures were submitted in the unique contest. Mr. Draxler entered a picture of the Olympic Torch. The following statement from Mr. Draxler should be of interest to all photographers, and explains, perhaps, why his picture was of such excellent quality:

"When I went to the great Los Angeles stadium and saw the Olympic Torch—blazing for the first time in California," says Mr. Draxler, "I was moved by thoughts of the classic Olympic Games, which have handed down to us from the fields of Olympia this torch and symbol of high ideals . . . by thoughts of those men of stainless character and physical perfection who met in competition gainless but for the honor of winning under the mighty Olympic oath. I was impressed by the majesty of the revival of these principles in the modern Olympic Games, and their mighty power in uniting all nations in good fellowship and brotherhood. I wished to express as best I could in a picture the sursum corda (Lift up your hearts!) symbolized by the Olympic Torch. I chose a low set-up, to portray *risingly* the portal and torch. To strengthen the "reaching up" effect, I eliminated the basis of the portal, letting it emerge from silhouettes of flowers. I framed it with trees to link Nature and her guiding purity with man's efforts. I took it at night to have the flame register as light, uplifting and leading in the darkness."

◆

Home Movies Worry England

SINCE the introduction of panchromatic negative for sub-standard camera users, the quality of home films has improved tremendously and proven itself a sales impetus.

A survey of the home movie market reveals the fact that there are now 150,000 users of home projectors in England. It is estimated that after the Christmas sales this number will be increased to 200,000.

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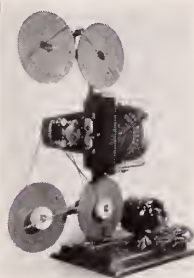
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The proper size picture means more realism and better perspective. Biophors in seven focal lengths permit picture widths of 1 foot up to 11 feet or more; or a projection distance of 3 feet to 100 feet and beyond. In every case with crisp, sharp, contrasty images, truly even illumination from center to edge, and the most "professional" results of which your illuminating system is capable. Ask your dealer or write for detailed literature.

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To Maintain 16 MM. Standard

FOR the purpose of clarifying the 16 mm. sound-on-film situation, the RCA Victor Company, Bell & Howell, and the International Projector Company, leading manufacturers of sound reproducing equipment, and Eastman Kodak Company, the largest producer of sixteen millimeter film, have individually decided to maintain the present standard size 16 mm. film in the production of sound-on-film motion pictures by eliminating one of the two rows of sprocket holes and by utilizing the space thus acquired for the sound track.

In maintaining this standard and by the elimination of one row of sprocket perforations, the dimensions of the picture on the film remains the same as on the present 16 mm. silent film. Present stocks of silent film can be run on sound projectors for the new film. The center line of the sound track is located centrally in the space between the picture and the edge of the film, the space thus available permits a sound track .085 inches in width and suitable margins on each side of the sound track.

The standard speed of 16 mm. sound film is 24 frames per second and the lead of the sound with respect to the picture is 25 frames in advance.

By maintaining the same size and position of picture on the film it becomes unnecessary to change the projector lens, to shift the projector, or to increase the candle power of the projector lamp in order to get the screen picture of the same size, brilliancy and definition.

Music Negotiations

NEGOTIATIONS for the right to use American music in talking pictures produced and distributed by Electrical Research Products' producer-licensees are being carried on with John G. Paine, Agent and Trustee for a large group of American publishers according to the statement by Donald S. Pratt, Manager of ERPI's Music Rights Department.

Negotiations are also being carried on with English and Australian publishers, Mr. Pratt stated. These are being conducted between ERPI's English and Australian Music Rights representatives and Mr. Charles James Dixey and Mr. Sydney William Edwards who, respectively, act in capacities similar to that of Mr. Paine in this country.

ERPI's contracts with continental European publishers are individual ones and renewal negotiations are being conducted by ERPI's Paris office. Over 400 catalogs of music are involved in the negotiations. Of this number about 150 are American. ERPI's Music Rights Department, Mr. Pratt emphasized, is a non-profit organization maintained for the convenience of its licensees. Substantial economies in overhead costs are effected by the centralized handling of the Music Rights situation as each producer would otherwise be obliged to organize and maintain its own Music Rights Department.

New German Device Speeds Television

A NEW device has been developed by the Zeiss works in Germany which is called "interfilm television."

It reduces materially the time consumed in developing motion picture film and getting it on the air. With this new invention this work can be done in 20 seconds.

Officials of the NBC state that this is one of the most important steps yet taken in the television field.

Latvia Drops Quota

LATVIA has abolished its import quota, according to advices received by the Motion Picture Division of the Department of Commerce. The country is now permitted to import pictures without restrictions except for the usual censorship before exhibition.

Amateur Movie Making

(Continued from page 30)

life, and nothing so completely dates a picture as antiquated humor in the titles.

The length of titles is vitally important. As a rule, they should be brief; but where the title indicates a change of time or place, the length of the title should be more or less proportional to the time or space gap that it bridges. Action occurring a few hours later, or in the next room, can be introduced by a title stating just that; but if months or years elapse, or the action changes half across the globe, a title bearing just that bald statement is usually on the screen for too short an interval to allow the audience to readjust itself to the change. On the other hand, such titles mustn't be too wordy; so a good plan is to fade out on the preceding scene, and to fade in on the following one; in extreme cases, the title itself may be faded in and out as well.

The spacing of the titles is a delicate matter. They cannot come too close to each other, nor should they be too widely separated. In a scenic film, this spacing is relatively easy; but in a documentary or dramatic film the spacing of the titles must be considered from the beginning of the preparation of the script. Moreover, spoken titles must be carefully placed so that it is clear who is speaking. As a general rule, avoid cutting a spoken title into a long or medium shot unless the action or the wording makes it absolutely clear who is speaking. It is always best to flash a bit of a close-up of the speaker just before and just after the title, then returning, if necessary, to the original longer shot. It is not, by the way, necessary to use all of the footage photographed of an actor speaking such a title; just show a flash of him starting to speak, then the title, and then a flash of him finishing his speech. The audience subconsciously gets the impression that they have seen him speak the whole title—and you save a good bit of footage.

The relationship between titles and tempo is rather a bit too involved to be dwelt upon here. Clearly, however, a title—any sort of a title—to some extent slows down the action. Therefore, the fewer the titles, the faster the tempo, and vice versa. On the other hand, if you want the tempo slow, titles will help you to make it so. For a slow-moving tempo, longer titles are permissible; for a fast-moving tempo, short, staccato titles are vital. Above all, don't try to explain too much in a title. I remember some years ago seeing a picture of the home-talent type, previewed. At one point, the hero was about to be lynched; a title came on "Let's hang him in Mackintosh's old barn!" The audience roared, for the name had no significance except, perhaps, to those who had actually gone out into the country and used farmer Mackintosh's old barn as a location. The two words, "Hang him!" would have told the story more effectively, and maintained the mood and tempo of the action.

The visual effect of the titles is equally important. As a rule, plain backgrounds and letterings are the best, as they are the most legible. Art backgrounds are attractive, it is true, but they generally take the attention away from the story. Art backgrounds are legitimate for main and credit titles, for titles introducing new sequences, and for "The End." The others should be on plain cards, with no more than a dark, mottled ground at the most. One very useful art title, however, can be one definitely marking a production as your product or property. It may carry some such phrase as "A John Smith Production," or "From the Library of John Smith." Behind may be any type of background or conventional design you may desire, after the fashion, for instance, of Paramount's mountain-top, R-K-O's radio tower, Pathe's roster, or M-G-M's lion, or a coat of arms.

Animated or trick titles are at times useful as main titles, while double-exposure titles are likewise useful for both main and credit titles.

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Photographic Emulsions

(Continued from page 10)

experimenters had been worried by their inability to go but slightly beyond that section of the spectrum, and to render all colors in their natural, tonal values. Photography was always a sort of balance between two great evils; blue objects that reproduced too white and red ones that were rendered too black.

This difficulty has been overcome in the so-called panchromatic emulsion, which marks off the latest period in the development of photography. This emulsion is a modification of the ordinary gelatin emulsion, formed by incorporating in it particular elements which increase the sensitivity over the troublesome parts of the spectrum, particularly the red portion.

The latest development of this product exalts our idea of the beauty and dignity of scientific research, and induces speculation as to how much further it may be developed. It possesses a sensitivity never anticipated by the most sanguine workers; it embodies the revolutionary idea of a tinted base which greatly reduces the evils of halation; it has made possible every known process of natural color photography.

An interesting comparison between the speeds of the various emulsions may be found in the following table:

Niepcé's Asphaltum Process	8 hours' exposure
The Daguerreotype	1 hour
Talbot's Calotype	3 minutes
Collodion Wet Plate	10 seconds
Collodion Emulsion (dry)	15 seconds
Early Gelatin Emulsion	1/15 second
Modern Emulsion	1/55 second

The above, under similar light conditions, at stop f/16.

Reversal Process

The popularity of the sixteen millimeter film suggests the subject of the reversal process, or more correctly, direct positive, a process not generally understood. It is also involved in the operations of various color processes. In the case of the miniature film, it is designed to reduce the double cost of negative and positive, and to furnish only the single positive. The procedure depends upon the character of particular chemicals, such as potassium permanganate, potassium bichromate, and persulfate of ammonia. These chemicals have the power of reducing the metallic silver, but have no effect on the unexposed compound in the emulsion.

Reference to these chemicals again reverts to the peculiarity of hypo which has just the opposite function, that of dissolving the unexpected silver salts without attacking the free silver.

In conclusion, it must be acknowledged that no claims to originality are here intended. The paper results from the author's impulse to express something of the beauty, romance, and drama of photography not generally reflected in prosaic text-books and scientific disquisitions, but which are certainly inspired by a study of the developments of that fascinating combination of art and science.

Printed through the courtesy of the S. M. P. E. Journal.—The Editor

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 Bass Camera Co., 179 West Madison St., Chicago, Ill.
 California Camera Hospital, 321 O. T. Johnson Bldg., Los Angeles, Calif.
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 E. M. F. Electrical Supply Co., 430 Massachusetts Ave., Cambridge A., Mass.
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 Edwin A. Hahn, 223-225 Columbia St., Utica, N. Y.
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The Rolleiflex



BURLEIGH Brooks, of 127 West 42nd street, New York City, American distributor of the Rolleiflex camera, reports a tremendous interest in this small camera. An unusual feature of this small camera is its square format, which feature is claimed by Mr. Brooks to be really worthwhile. This camera has a Compur shutter with only one lever, serving for both tension and release. Film-transport with automatic counter. It has a rigid housing with four-spindle drive. It has a focussing hood with self-setting magnifier.

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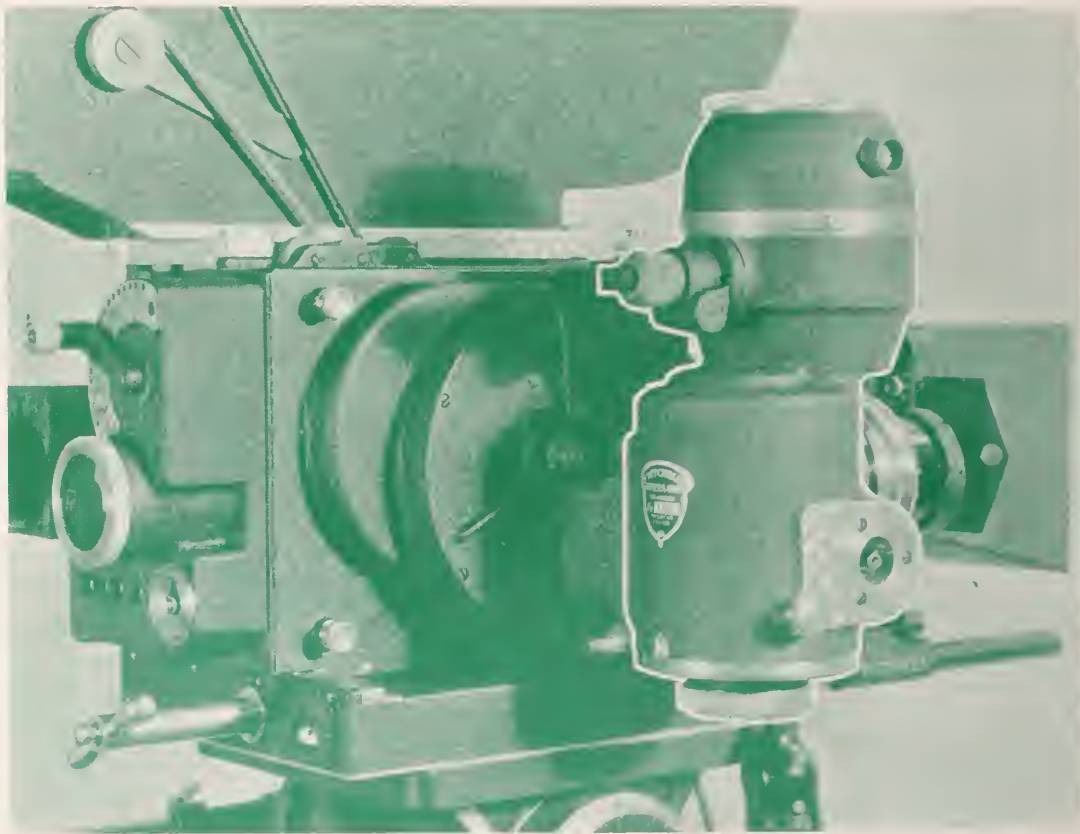


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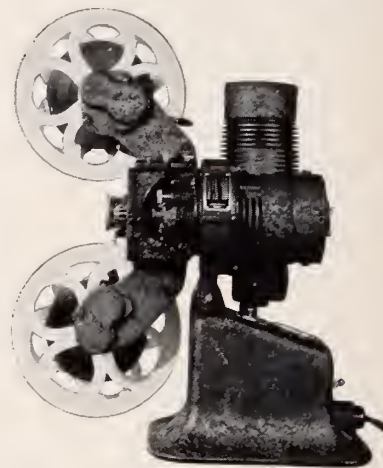


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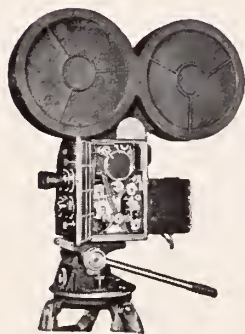
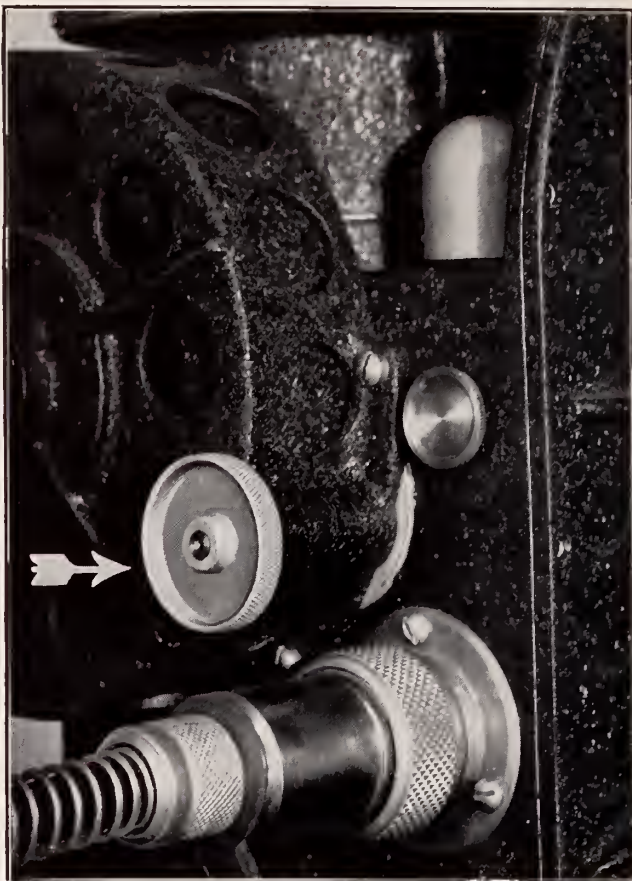
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It is not difficult to select a group of first cinematographers capable of directing the photography of a major studio's product. In a large majority of instances, these men are placed under contract by the studio and retained regularly because of their known artistic ability and production efficiency. But, however good these men may be, they cannot work at their maximum efficiency unless they are working with crews with whom they are familiar, and in whom they feel free to place implicit confidence. It is therefore vital to surround these men with a staff of subordinates which seldom changes from picture to picture, making vitally complete photographic units. In our own case, we have found it the best policy to do this, both for our own protection and for the interest of the various first cinematographers in question.

It is the same with equipment. With the short production-schedules now in effect, valuable time may be lost if the second cameramen and assistants are made to work with unfamiliar equipment: and, despite the fact that all cameras and accessories are of standard design and make, there are numerous minor differences in operation, unimportant in themselves, but which nevertheless must be allowed for if a production camera-crew is to operate at full efficiency. There is, in addition, a highly important advantage to such a policy, for if each assistant is regularly working with a certain equipment, he will take personal pride in maintaining it constantly at its maximum efficiency. In our own experience, we have found many instances where assistants, knowing that they would regularly be working with a given equipment for a period of years, have devised special accessories to improve either the efficiency or the convenience of operating their equipment; some have even been known to spend their own money on such private experiments.

In any major studio, the problem of keeping the photographic equipment operating at maximum efficiency naturally involves the establishment of a well equipped camera-machine shop, staffed by trained camera mechanics and engineers. This shop is equipped to repair or rebuild all types of cameras, relying upon the local camera factories and factory-branches for parts only, and thereby effecting considerable economies in both time and money over the practice of depending upon outside agencies for such maintenance work. We naturally feel, too, that such work is best done by our own camera-shop personnel.

In actual practice, the maintenance of the studio's cameras is routinized as follows: during production, it is the responsibility of the assistant cameraman to whom the equipment is assigned to keep the camera cleaned, lubricated, and in perfect operating condition. If at any time during production, he detects any flaw beyond his ability to repair, the camera is inspected by the department head, and, according to the need, either sent to the shop for the necessary repairs, or repaired on the spot by a mechanic sent from the shop. In such cases, production is continued by the use of a reserve camera. In the event, however, that so many units are in work that no reserve cameras are available, the camera is often sent to the shop and repaired at night so that production may continue uninterrupted in the morning, and without the added expense of renting a camera from some outside source. In the case of Akeley cameras, which are used principally for special aerial scenes, and which are generally the personal property of the Akeley special-

AT ANY time, the efficient functioning of a studio's camera department plays a vital part in the efficient operation of the studio; but under the economic and other conditions now prevalent, camera-department efficiency takes on added significance. For, in the last analysis, it is upon this department that the brunt of transmuting the studio's product from the abstract to the concrete, from intangible ideas to saleable products, rests. Obviously, therefore, the individual or individuals in charge of such a department are faced with two related problems: first, organizing the department in such a way as to ensure efficient operation; and second, routinizing maintenance, procurement and experimentation in such a way as to keep both the personnel and the equipment of the department operating at maximum efficiency. All too little has been said or written about these important problems; therefore, though painfully conscious of my limitations as a writer and otherwise, I have been called upon to contribute some slight description of the methods and routine which we have found most useful at the Hollywood studios of the Paramount-Publix Corporation.

There are, first of all, two phases to the question of organization: the matter of personnel, and the matter of equipment. In the days before the introduction of sound, camera-department organization was a problem largely of personnel, since the majority of cinematographers preferred to use their own equipment. What equipment was owned by the studios was rarely used except when extra cameras were required for mob scenes, and the like. The introduction of sound, however, brought about a radical change in this practice, due to the special equipment needed, so that today it is almost unknown for a cinematographer to supply his own equipment for a major production. Therefore very far-reaching reforms have taken place in all matters relating to equipment.

The first consideration, however, remains the same: the procurement and maintenance of the department's personnel. This personnel is naturally sub-divided into two distinct classes: the actual operating personnel—the cinematographers, second and assistant cameramen, who are actively engaged in photographing the studio's product—and

Organization and Maintenance

by
Virgil E. Miller

Head of
Camera
Department,
Paramount
Studios

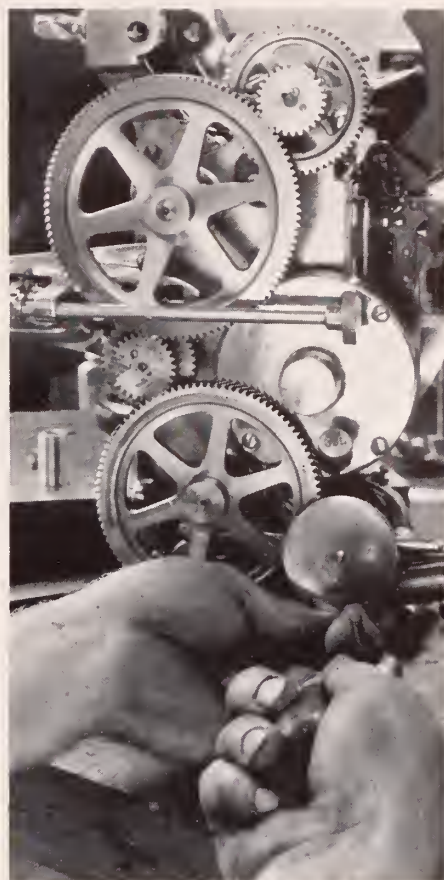
ists engaged for the making of those scenes, the facilities of the Studio's shop are available to the individual while in the Studio's employ. In some few instances, Akeley men may use the Studio's Akeley cameras rather than their own: in this event, the man is called a day earlier, and given an opportunity to familiarize himself with the camera before commencing work on the actual production. Color cameras, of course, are usually the property of the firm whose color-process is being used, and their maintenance is contractually the responsibility of the color firm, which likewise supplies the operating personnel.

When companies work on location, away from the studio—even if it is only at the studio ranch—we have found that the best policy is to send a camera mechanic with the company. Then, in the event that minor adjustments must be made, the mechanic is on hand to make them quickly, and with the minimum delay in production-time. On distant locations, where the company is actually operating away from the studio for days at a time, and at such a distance as to preclude a nightly return to the studio, it is by far the most efficient system to have a mechanic accompany the unit. On such locations, a reserve camera is always taken. Such locations almost invariably involve operation under unusual conditions, such as salt sea air, desert dust, and the like: if a camera mechanic is with the unit, there is less danger of camera-troubles due to these factors, since the mechanic is able to personally check the cameras every night. In addition, with a trained mechanic in the company, the assistants are as a rule far more painstaking in cleaning and maintaining their equipment.

At the close of each production, the assistants are retained for an additional day to carefully inspect and check everything about the cameras used on that production. Whatever mechanical repairs may be needed are reported to the department head, and the necessary repairs are authorized by him, and carried out by the shop before the camera is again used on production. Here, the policy of keeping camera personnel and equipment together as definite units proves its value, for the assistants, knowing that they will be using that identical camera on their next production, are particularly thorough in their inspections, and do not attempt to conceal minor faults or damages which they might, under other circumstances, attempt to conceal as militating against themselves.

In all of this maintenance work, detailed records are kept of the history of each camera, showing its condition, what work has been done on it, its age, and the cost of all repairs, etc. Thus we have on file at all times a complete record of the condition, history and cost of every equipment.

The studio has recently established an Optical Section, in charge of an expert optical engineer, in which all lenses may be checked and tested, and in which all the necessary optical maintenance may be done. In addition, this department is able to handle the procurement of such items as optical glass for camera-blimps, etc., as well as serving the entire studio in optical matters. While the section has only just been established, it is certain to prove of tremendous value to the entire studio, and especially to the camera department.



Under such a system of operation as has here been outlined, it is naturally vital that those in charge be able to know exactly where every individual and every item of equipment can be located at any moment. For this purpose, daily schedules are made out, showing the location of every company, and specifying the name and number of the production, its location and call, the camera personnel, and the exact equipments being used. These schedules are kept corrected to the minute: copies are sent to the studio operations office, and posted on the call-boards in both that office and the camera office. This is especially necessary in the Paramount Studio, as the grip department is responsible for the heavy units of equipment used by the camera staff—the blimps, rolling tripods, perambulators, cranes, etc.

A further vital part of the efficient conduct of any camera department is experimentation. New accessories and new equipment must constantly be devised to meet the changing needs of production. This work is handled under the direct supervision of the head of the camera department, and executed, as may be fitting, by the camera machine-shop, the optical shop, or by the studio's mechanical construction shop. In the case of minor developments, the development and production costs are usually charged against the individual production for which the device is originally intended. In the case of devices slightly more costly, and definitely adapted to several productions, the charge may be spread over several productions. In the event that the development is a matter that will benefit the entire department in its operation, the charge is against the department's operating account. There is, however, a definite need of a special fund for research and experimentation, though, to my knowledge, no studio has ever established such a fund. In that case, all of the experimentation that is now undertaken, and considerably more that is not, could be efficiently handled without imposing any burdens upon either production costs or departmental operating charges.

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Paint to give the effect of light is shown in the arch scene at right and at side of stairway at left of photo.

Lighting with Paint

by

Holt D. Lindsley

Head of Scene-Painting Department,
R-K-O Studios

MOTION picture-making is, to the cinematographer, "Painting with Light;" to the scene-painter it is just the reverse. Sets are not painted merely to make them appear finished, but to definitely aid the cinematographer in his work of bringing them to the screen.

We have found, through many years of experience, that a cinematographer is able to work more efficiently—and therefore faster and more economically—on a set that is intelligently and photogenically painted. As a natural consequence, therefore, the painting of motion picture sets has become an intensely specialized craft, differing widely from ordinary interior-decorative painting or from stage scene-painting, and accordingly making entirely different requirements upon its personnel.

In the first place, the studio scenic painter must, in addition to the inevitable ability with paint and brush, be possessed of a keen artistic perception, coupled with an acute sense of realism and a high development of the faculties of observation, visualization and memory. Lastly—but most important—he must have camera-sense in a very high degree, for he is painting, not for the eye, but for the camera. He must know how every color and pigment, every type of paint and mixture will photograph. He must know just how the set will look when the lights are turned on, and he must understand enough about lighting so that he can paint his set so as to coordinate with the probable lighting used, and, in many cases, actually aid in the lighting.

The most obvious instances of "lighting with paint" occur, of course, in some of the European pictures, and in those produced by Roland West in this country: in these, the principal shadow-masses are often painted on the walls and floor of the set with black paint, so that these important parts of the composition are ready-made for the cameraman. All that is necessary is to arrange the general lighting of set and players so that it carries out the idea indicated by the painted shadows; this, of course, gives the cameraman greater freedom in lighting his set quickly and then

being able to concentrate on lighting the characters. The reverse of this is often done, too—painting beams of light coming through windows, etc., (especially in night-effect sequences) on the floor of the set with white or aluminum paint. Similarly, it is often a great time-saver to paint the light from a wall-bracket on the wall behind the fixture. This, incidentally, has the additional merit of saving a spotlight which would otherwise be used to create this relatively unimportant spot of light.

But this is only the crudest and most obvious phase of "lighting with paint". Far more important is the scene-painter's opportunity to help the cameraman in creating an illusion of depth and roundness in a set by painting in many of the various little catch-lights which, if created by actual lighting, require so much time to obtain, and which are so vitally important to the perfection of any scene. Every cinematographer, for instance, invariably high-lights columns, to give the effect of roundness on the screen: the same high-lights can be produced by a paint-brush, far more easily and quickly. Imagine, too, a set that has a series of arches extending back from the foreground pieces. Lighting them properly, so as to get exactly the gradations necessary to produce the right perspective, is difficult; but if we paint them in progressively graded shades of grey, we not only secure the perspective easily, and add depth to the set, but give the cinematographer more time to devote to lighting the rest of the set, and the all-important actors. Another aid is to paint the corners of the set dark, so that they stand out from the lighter-toned walls. This will permit the cinematographer to use fewer spots, and to let the general lighting take care of these details. It is possible, as well, to make sets appear much lighter than they actually are, by painting the top of the set darker, blending, of course, gradually up from the lighter lower portions of the set.

The use of forced perspective painted upon flat backings proved a very successful artifice in the American picture "Broadway," and in several more recent foreign films, especially those of Rene Clair, most recently, of course, "A Nous la Liberte," which utilized this to a considerable extent.

An amusing expedient, analogous to the proverbial gilding of the lily, is the practice of spraying the leaves of plants with crystal oil, to produce an artificial halation, which gives depth and brilliance to foliage. Another job for the air-gun is, of course, the artificial ageing of sets. The effects of age which can be produced in this manner are truly re-

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THE cameramen of Hollywood are the most remarkable group of artists it has ever been my good fortune to know. Their artistry is, of course, proverbial; so, too, is the fact that they are individually and collectively as fine a body of gentlemen as one could meet anywhere. But to me, the most remarkable thing about them is the fact that there seems to be absolutely no professional jealousy among them. In no other artistic group that I have encountered, either in the theatrical profession or out of it, have I found such absolute freedom from professional envy, and such a remarkable spirit of cooperation.

In practically every other field of art, achievement is an intensely personal affair; but the cinematographer seems invariably to strive, not alone for personal glory, but for that which will most greatly benefit his fellow-cameramen and make each picture (his or another's) a better one. Each cameraman seems genuinely proud when one of his fellows scores a success, and is sincerely sympathetic when one of them receives a set-back. This spirit alone is enough to make these men stand out as an unique group in any walk of life: but even more wonderful is the spirit of co-operation which pervades the camera profession. There seem to be no professional secrets between cameramen. If one man devises a piece of equipment, or a trick of lighting, which may be helpful to his fellows, he does not guard it as a personal treasure, but freely passes it on for the good of all. Frequently on starting a picture with a strange cameraman, I have seen the men who have worked with me on other productions volunteering advice as to the angles, lightings, etc., which they have found to be the most advantageous in photographing me. Among no other professional group have I ever known of such a generous co-operative spirit.

This spirit is very finely expressed in the existence of the American Society of Cinematographers. I have known of many clubs of artists and professional people, but never of one like the A. S. C., which exists not alone for social or economic benefits, but to practice concretely this ideal of professional cooperation. Practically all of the cameramen with whom I have worked have been members of this wonderful organization, and from them I have learned

I Meet the Cameraman

by

Tallulah Bankhead

enough about the society and its achievements to give me an unbounded admiration for the men whose idealism and ability have conceived and maintained such an organization.

Entering the motion picture business as I have, fairly recently, and coming into it from the stage, one has in many respects a helpful perspective with which to view many of the things which film people are prone to take for granted. Among these are the cameramen. Those of my friends who were already in the films had told me that the cameramen were, individually and collectively, splendid fellows and incredibly fine artists, and that a sympathetic cameraman was as essential to the success of a star as is a good story—but I found that they told me only a small part of the tale. No words can describe the artistry, the patience or the importance of the cinematographer. I am told that it is traditional for laymen to be disappointed upon seeing or meeting their favorite film stars in the flesh. I don't doubt it! No matter how perfect or how beautiful a star may actually be, the magic of the camera can add to that perfection to an unbelievable extent. Those of us who are not naturally perfect beauties—and our name is legion!—owe everything to the men who photograph us so skilfully. In my own case, I cannot say enough in praise of the men who have dealt so kindly with me in photographing my pictures. I have not, unfortunately, been in this business long enough to have had the good fortune to know and work with all of the cinematographers, but the four men with whom I have worked: Larry Williams, George Folsey, Charles Lang, and Oliver Marsh, have proven themselves not only superlative artists, but very fine gentlemen as well. I am proud to have known and worked with them—and I congratulate the camera profession on having such men. Each of them has done marvelous things in the course of their work on my pictures, and each has revealed himself as the most patient of teachers in helping me to accustom myself to this new medium.

There is really a tremendous difference between acting on the stage and acting for the screen. On the stage, of course, your technique is basically different because you are playing all of your scenes, in picture parlance, in long-shots. Even though you may be able to hold your audience in the hollow of your hand, it is always held at arm's length. It is never suddenly brought close up to you, with its attention riveted upon your face alone. You have in your favor the tremendous asset of color, and the intangible advantage which your actual presence gives. In the films, of course, it is just the reverse. To offset this, you must depend upon the cameraman. It is he who must photograph you so as to bring the warmth of your personality to the audiences throughout the world. If he fails in this—if you are a subject entirely unsuited to photography—the world holds you responsible; yet if he succeeds—if by his artistry he manages to make the shadow of your unlovely self a warm and vibrant personality—it is your success, not his.

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Meet Tallulah Bankhead, who tells you her opinion of the Cameraman in this article.



TREND

of the TIMES

● ONE of the best news "sniffers" back east—not the keyhole type—tells us of a title concern that was on the treacherous rocks of bad business, in fact business was terrible, or to use a more graphic expression, it was rotten.

They proved to be true to the promoter type when one of their number conceived the brilliant idea of using the daily papers to advertise a movie test of 25 feet for \$25.00. And did the embryo Crawfords and Dietrichs and Shearers come. The front of their place looked like a \$5.00 Hollywood premiere with the anxious movie struck girls dressed in their best bib and tucker and a twenty-five dollar wad in their sock awaiting their turn for fame and fortune.

If this movement gains any impetus across the country the proponents of the silver standard need no longer worry.

● THERE seems to be an unannounced contest in vogue among the studio writers to find a trick motion picture shot that the camera department cannot execute. Only a few months ago the story brains of the industry did not know that such a thing as a "trick" shot existed. Then, of course, as they say in the fairy stories, one day a camera man showed a subway train on the screen, with the leading players boarding it and the crowds jostling on the platform. All of it worked out in the Trick Department. Now plot is becoming incidental. The Trick is the Thing.

● LET'S ventilate the ventilation question. (Boy! open the doors and windows while we lay-hold of this problem.)

Now, just what good is ventilation? Why un-stagnize the breath laden air? Why make the stages of the motion picture studios more comfortable and pleasant on which to work?

Of course, ventilation is recognized by even the lowly farmer for his cattle. His cow barn, his chicken roost and even the humble pig-sty has its ventilation system, but the motion picture stage in some of the major studios are fine places to induce sleep. Of course, maybe a person working from 8 to 18 hours a day does not need fresh air, possibly a fagged body is the thing for which they are paying the high salaries. That this lack of ventilation shows in the quality of some of the pictures does not matter. But, of course, maybe that is what some of the producers want. Well, they're getting it.

Watch the yawns as the day progresses.

● WHILE all of the other motion picture publications rant against George M. Cohan for his bitter utterances after returning to Broadway, we wish to extend to him our thanks for those nice things he said about the cameramen and the technical crew . . . other than that deponent sayeth not.

● LET'S toss the question of politics about a bit. It's always a juicy morsel. Here's the true fable on which you can tack your own moral.

The specie supervisor of a picture didn't like the director, no sir, he didn't like him a little bit. He didn't even like his shadow, and the brotherly love was returned by the director. Seemingly the supervisor covered his margin in the market with all of the close-ups made by the director, in any event the close-ups were lost, so the picture was no

good. "We need a new director" said the supervisor in his best supervising voice. So the entire picture was junked and the new director comes on the job and remakes the entire picture with forty additional scenes, more or less, on advise of herr oberseer.

Perhaps the moral of this to the director is "never make a close up."

● NOW some professor in France is going to start pre-historic cycle in pictures. In fact he is going pre-pre historic. He is going so far back that he'll be the only man in the world because in the period into which he intends to research there were no men, just a bunch of those long necked lizards with the names like a complicated disease.

Professor, stop searching! Bring your troubles over here to one of our Trick departments.

● The bootlegger keeps his business a secret, the others advertise.

● THERE seems to be that certain elusive something in motion pictures that makes the professional and the amateur akin when the question of production is in consideration.

The much heralded extravagances of the director, star and producer are seemingly finding their counterpart with the amateur. It is an everyday occurrence, now that the Amateur Movie Contest in The American Cinematographer is nearing its close, to receive lengthy wires, long distance calls and even cablegrams from across the big drink asking for last minute information. Much like the director who finds after he has gone on a distant location that he has forgotten the script or perhaps even, the leading lady.

● FROM the Vaterland a leak in the police department has informed the world that the "flatties" of Berlin are turning to the motion picture camera to help detect crime. Now, let's not get a wrong vision of this innovation and picture a second Hollywood with motor cycle sirens blowing followed by a limousine with the director elegantly leaning back in the upholstery of a special built Benz, followed by another with the blonde bandit, and still another carrying the prospective gunman who has tipped the police that he is going to rob the Reich bank, and they should be on hand with their motion picture equipment. So he can give them the lowdown on just how a first class yegg works.

The "Polizei" work something like this. A crime has been committed, the burglar entered in a certain way, now their "Sherlock Holmes" intuition comes into play and they react the scene as they believe the burglar would have committed it, and ergo, there you have it, the crime just as it was committed for the rookies to study. Directors, take notice! Here's a new library source.



The new Cellulose Process Screen, developed for the RKO Studios by Sidney Saunders, standing at right.



THE transparency projection process has within the past few years gained universal recognition as one of the most outstandingly adaptable special photographic or "trick" processes ever devised. Since it is, therefore, in every-day use in practically every studio, any detailed discussion of the process itself at this time would be merely an unnecessary repetition of what is already well known; however, in order to avoid any misconception, it may be well to recall that this process involves the use of a large, sand-blasted glass screen, upon which is projected the desired moving background, which is rephotographed, together with the foreground action, by a standard camera operating in synchronism with the projector.

There have been, however, definite physical limitations to this process. In the first place, it is extremely difficult to procure satisfactory glass screens of large size; this, of course, definitely limits the utility of the process, as well as adding to the expense. It has heretofore appeared to be practically impossible to eliminate a very noticeable "hot spot" or area of increased illumination at the centre of the screen; all manner of expedients have been tried, including different types of surfacing, double and single-sided screens, and the like, but with little practical success. Lastly, the bulk and fragility of the glass screen—especially the larger ones—have raised many serious problems; most important have been the matters of danger and replacement, for a number of serious injuries have been occasioned by inadvertent breakage of these huge glasses, and, quite aside from the element of danger, the glasses are so fragile as to be non-insurable, while, under existing conditions, replacements are almost unobtainable.

The appearance, therefore, of a non-breakable, inexpensive, non-vitreous screen for this work is a development of an importance second only to the invention of the projection process itself.

Such a screen has recently been developed and is now in actual use at the R-K-O Studio in Hollywood. It was perfected by Sidney Saunders, an engineer in the Studio's Mechanical Department. A number of the new screens are being installed in the special-effects departments of other studios.

The new screen is of a cellulose composition somewhat akin to the familiar "Cellophane" used in the wrapping of many commercial products. In appearance, the Saunders Screen resembles a large sheet of waterproofed canvas; in use, it is stretched in a frame much as a sheet of canvas would be. It is flexible, non-breakable, inexpensive, and—unlike many cellulose products—particularly non-inflammable; it is actually impervious to anything but an open flame. Any heat sufficient to cause it to ignite would be more than sufficient to trip the regular automatic sprinkler system on the stage. These screens can be made in practically any size: the one in use at the R-K-O Studio is six-

Saunders Cellulose Screen Reduces "Hot Spot"

by

Vernon Walker, A. S. C.

Head of RKO Special-
Effects Department

teen by twenty feet—more than two feet larger in each dimension than the largest glass installation. A still more recent installation measures 17x23 feet. It appears the only limitations as to size are those imposed by stage space and the power of the projectors available.

Most important of all, however, are the definite advantages shown in the completed process shots made with this new screen. The objectionable "hot spot" is reduced by more than 50%, while the overall brilliancy of the projected picture is increased by better than 20%, and the projector-current can be proportionately reduced. This, translated into practical working terms, means that the cinematographer has a far greater freedom in both the lighting of his foreground action and the balancing of the projected-background with the foreground lighting. Moreover, the results obtainable with the new screen are far superior in trueness and gradation to the best obtainable with glass screens. The highlights, for instance, which are more or less greyed with sand-blasted glass screens, are a true white with the Saunders screen, while blacks, on the other hand, are more intense. The fidelity of the rendition of the tonal range between these extremes is likewise proportionately improved. The use of this new cellulose screen for process cinematography should, therefore, result not only in a considerable improvement in the quality of process shots and in the facility of their making, but also in marked economies in every phase of process work.



Modern special-effects work is frequently not noticeable as such. For instance, the ceiling on this set was matted in by the optical printer.

The Special-Effects Cinematographer

by

Fred W. Jackman, A. S. C.

Director of Scientific Research,
Warner Bros.—First National Studio

CONTRARY to the general impression, the studio special-effects cinematographer must be decidedly more than merely an engaging young person with a pleasant smile and a knack of doing strange things with a motion picture camera. Of course, he must be an expert in one or more of the many special photographic processes used for "trick" work; but in addition to being intimately familiar with all phases of photography, the trick-worker—especially the individual in charge of a large studio's trick department—must be a champion kibitzer. He must be thoroughly familiar with the technique and personnel of every other phase and department of production. No, it is not his task to show them how to do their own work—but only through intimate knowledge of the methods and aims of the other departments can the special-effects man make his department as useful to the other branches of production as it can be.

As a rule, the less technical departments of production—the writers, directors and cutters, not to mention, of course, the production executives—take one of two viewpoints in their relations with the trick department; either they ignore its possibilities completely, or they feel that nothing is too impossible for it to achieve. It is, therefore, up to the man in charge of the special-effects staff to wage a constant campaign of education as to the services

and possibilities of special-effects work. It should extend to every individual or department of production which could possibly benefit from the assistance of the special-effects department.

The writers, for instance, frequently hesitate to include in their scripts scenes or effects which, though easily possible through the aid of the special-effects department, would be either prohibitively expensive or dangerous if attempted in the normal manner. Since the advent of talking pictures, it is possible for writers to build up their stories through the use of dialogue in places or under conditions where recording would be impossible without the aid of the trick department. Certain optical effects, too, which are useful in telling a story can only be conceived if the ability of the special-effects department to execute them is known beforehand. It is therefore vitally important to familiarize the writing staff of a studio with the possibilities of special-effect processes, and to constantly remind them of these possibilities, so that they will simply proceed to turn out the best scripts possible, and leave the rest to the ingenuity of the special-effects staff. At least one major studio has adopted a policy of maintaining a special reel of process-shots from current productions, illustrating the possibilities of the various processes, and which is constantly available for exhibition to the studio's writers and directors. This is a fine policy, and one which should pay big returns in production efficiency.

The next link, of course, is the director. Or, to be more accurate, the directors, for a special-effects department is as a rule constantly working on scenes from half a dozen

or more productions. It is imperative that the process staff thoroughly understand the different ways in which each of these directors works, for this will in many cases determine the treatment to be given the process shots for a production. Some directors, for instance, go in for highly pictorial effects; others, for modernistic effects of angles, montage, etc.; while still others depend entirely upon the swift pace of their action, and prefer extremely simple, commercial photography. Each of these will naturally make entirely different demands for process scenes.

The cinematographers, too, are predominantly individualists; the artistic style and technique of no two men is ever exactly the same. The process worker must take this into consideration in planning his work, in order that the process scene may be a perfect photographic match for the rest of the picture. Unless a process scene matches the rest of the picture perfectly, carrying the same type of lighting, diffusion and general photographic quality, it is sure to stand out as a process shot in the minds of the rapidly growing multitude of amateur cinematographers, who study each picture as they would a textbook. To the uninformed layman, it will stand out as an intangible irritation, though he may not know what it is that bothers him. The special-effects staff must work in especially close coordination with the production cameramen, for different types of treatment in the regular production shots may require entirely different types of treatment for the process scenes—in some cases, even the use of different processes to gain the same effects under different conditions.

The production of the process shots themselves is more or less a matter of routine. It has been discussed in these pages so frequently that further repetition at this time is unnecessary. There is, however, one phase of the problem which has seldom, if ever, been mentioned in print; this is the matter of costs and estimates. Under the existing conditions in the motion picture industry, rigorous economies in all production expenses are mandatory. Miniature and process scenes are used primarily to save money in production costs, and to add production value without proportionate increases in cost; but this work can very easily absorb an entirely disproportionate amount of money unless the greatest care is exercised. I have known of instances where a miniature actually proved more costly than a full-sized set would have been. It is entirely wrong to believe that simply because a miniature is small it is cheap. Quite the reverse! The building of miniatures requires the employment of highly skilled designers and workmen, and, unless the work is properly supervised, the costs of a miniature can be run up to very sizeable figures.

The greatest of care must naturally be used in planning miniatures. Their design and construction demands years of specialized experience, for a motion picture miniature is something basically different from either a toy or a conventional display model. It is a true scale model—but with all irrelevant detail suppressed. Suppose, for instance, we are to build a miniature ship. We would not build it as we would a regular display model, which is to be placed in a show window for everyone to admire. If you visualize a ship at sea, far enough away so that the width of your field of vision is twice the length of the boat, you will get only the essentials; if the ship is a steamer, you would notice the number of funnels, and differentiate as to whether the craft were a warship, a liner, a yacht or a tramp. If it were a sailing ship, you would be conscious of the number of masts and, roughly, of the rig—but you would not be conscious of every detail; every rope and pulley, every stay and stanchion. If you build a reduced-scale reproduction of what you have just visualized, you would not have any sort of a display model, but you would have an excellent motion picture miniature.

It is the same with architectural miniatures. Irrelevant detail must be suppressed. A miniature which, to the eye, seems a perfect reproduction of a building or group of buildings, would be very likely to show up on the screen as a

most obvious miniature. Let us suppose, for instance, that we are to build a miniature of New York's Broadway. If we build it with photographic accuracy and detail, no power on earth can make it look like anything but a miniature on the screen. If, however, we build only the salient details—the contour of the buildings, the course of the street-car tracks, a few dim shapes of automobiles, trams, etc., leaving the rest to the imagination, we would have a satisfactory miniature. Since we have left out a great deal of the detail, such a miniature would be far cheaper to build, as well as more satisfactory than a detailed model.

The most satisfactory method of building these architectural miniatures is to use relatively crude plaster casts, with only the most meagre detail. If you build them out of wood, you find that it is practically impossible to eliminate the sharp lines on corners, etc., so that regardless of lighting, diffusion, or anything else that

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Right—Some early thrills supplied by the Trick Department. Below—Mr. Jackman.

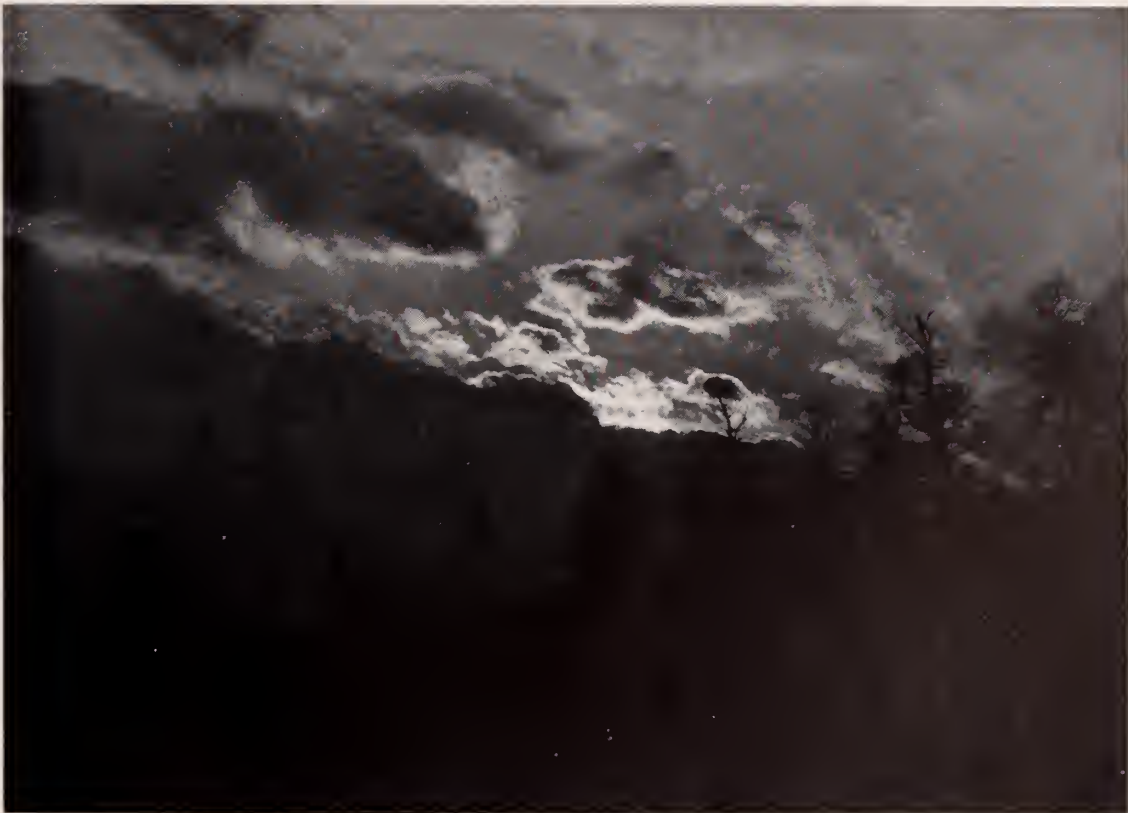




Moonlit Path • by H. M. Armstrong



Sunset
High Sierras
From Desert
by
S. C. Manatt



"The
Melancholy
Days
Have Come"
by
Nicola Buzzo



RIDDLE

ME THIS

THE RIDDLE

Do you prefer to make your exteriors with the interiors, on the studio stage, or to make your interiors, with the exteriors, on location?

HAL MOHR, A. S. C. I've done both. In fact, on my last picture, "The First Year," I used the former method, while on my current one, "Tess of the Storm Country," I'm using the latter. Unqualifiedly, I prefer making the interiors on location. It's harder, but the results are better.

For "The First Year" we built a truly remarkable middle-western village on two of the stages at the Fox Western Avenue Studio. Inasmuch as most of the exterior action was in the form of night-effect shots, the plan worked out rather well—and was, of course, a great convenience in preventing actual night work. But you cannot reproduce natural lighting by any of the methods so far known; if you make an exterior scene by artificial light, it will show up on the screen for exactly what it is. You can't disguise it any more than you can disguise a lithograph to look like an oil painting.

If, on the other hand, you build your interiors as practical parts of your exterior sets, you usually will secure something you couldn't accomplish in any other way. Of course, the difference in the intensity of the natural light outside and the artificial light inside raises some difficult photographic problems—but these can be overcome. For "Tess of the Storm Country," we have built all of our interiors as practical parts of the exterior settings. So far, the results have proved more than satisfactory.

This method—particularly in the case of such small sets as we have been using—involves more work; but the results are worth every bit of it. I feel confident that if we can keep up the pace we have set so far, "Tess" will be the finest work of my career.

You see, working in this way, we are forced to do what we should always do—but usually don't do. We must con-

sider every shot—every camera-set-up—as an entirely distinct and separate entity. Not only do we have to move the camera, but we literally have to re-light the set for every shot. Not re-light it in the prefatory manner we usually relight an ordinary set, but literally move every light on the set. Working in such cramped quarters, every light must be in its right place; there can be no superfluous units. In the same way, every camera position must be carefully thought out ahead of time. There can be no unnecessary footage—no unnecessary set-ups—and no unnecessary movement.

But these restrictions give us many un-looked-for effects. So far, I have made more than 85% of the picture with a 25mm. lens. The quality and perspective that this gives has surprised me. For instance, in one shot I made the other day, I achieved the effect of a "zoom" by a simple pan in which I swung from a closeup of Miss Gaynor to a long-shot of the cabin with a simple free-head pan.

Of course, these unusual conditions make us all work harder, and take more time, for we are constantly re-lighting and, in many cases, actually re-building the set from one shot to another. But the results justify the trouble, for by forcing us to depart from the conventional, this method gives us the unusual in lighting, in composition and in photographic and story treatment.

OLIVER MARSH, A. S. C. When I started to make "Rain," which, as you know, was made entirely on location at Catalina, I felt the idea was all wrong. I wanted to handle the picture in the conventional manner, making the exteriors only on location, and coming back to the studio for the interiors. But as we got into production, I found I had been mistaken. I really secured better results than I could have in the conventional way—more truly in sympathy with the motivation of the story. In addition, "Rain" was an easy picture to work on because every shot had been definitely planned in advance; the sets had been designed with the camera and its problems in mind, and everything fitted together perfectly. If I had to do this picture over again, I'd choose the same treatment.

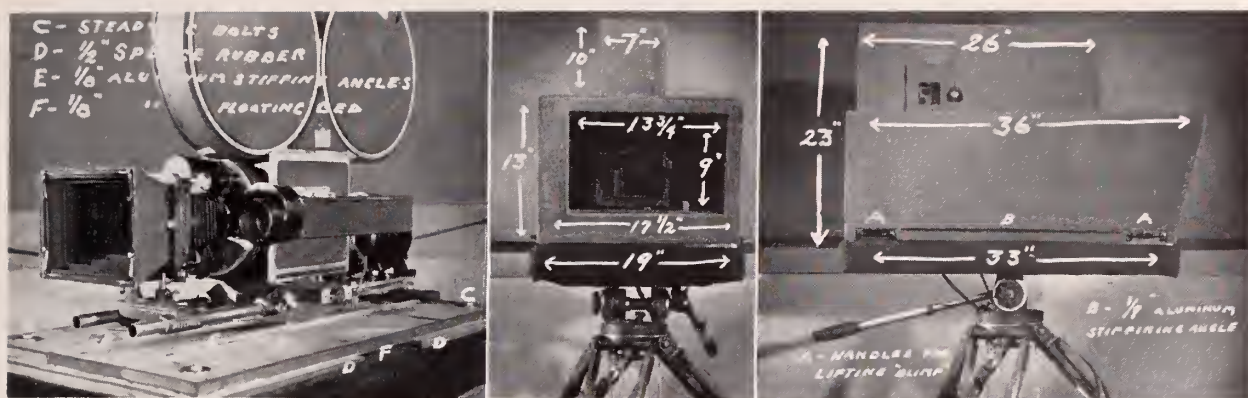
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Interior taken
on location



Exterior taken
in the studio



More Silence, Please!

by

John G. Gilmour

Head of Visual Instruction Section,
General Electric Company.

SILENCE is golden. No where does this statement hold more truth than in a modern sound motion picture studio. To the uninitiated, this sentence may seem contradictory, but it is, nevertheless, a fact. Every bit of equipment used upon a set must be able to operate noiselessly while a scene is being taken. Technicians, too, must be quiet while maneuvering this apparatus else the microphone would pick up extraneous noises made by them and their instruments.

In view of this fact, studio paraphernalia today has been materially altered since the "silent" picture era. The sputtering, hissing arc lamp, used to illuminate sets, has given way to the quiet, convenient, high-wattage Mazda lamp. Electric motors now drive cameras synchronously with sound recording machines. These cameras, once clattering, ticking, sound emanating devices, have been improved to operate more quietly. Since absolute silence has not yet been obtained, individual housings of sound proof material called "blimps" enclose each camera when a sound sequence is being shot.

"Blimps" differ in construction and there is room for more improvement; but satisfactory results have been obtained by the Visual Instruction Section of the General Electric Company in its sound studio at Schenectady with a housing of its own design and construction. This "baby booth" consists essentially of two units, a base and a cover or hood.

The base is of $\frac{1}{8}$ inch sheet aluminum and measures approximately 19 inches by 33 inches. The edges of this sheet were bent at right angles so as to form a tray about 2 inches deep. Holes of 2-inch diameter were drilled in the tray to remove "drumminess." To assure rigidity, 2, $\frac{1}{8}$ inch aluminum angles of $\frac{1}{2}$ inch size were screwed longitudinally to the underside of the tray. To the underside was also affixed a block of steel machined in the form of a wedge so as to fit snugly into the Bell & Howell tripod

plate on our Mitchell Tripod. The outer surface of the tray was then covered with 2 layers of $\frac{1}{2}$ inch felt. For the sake of appearance only, this surface was covered with a thin layer of finely woven black felt.

A piece of $\frac{1}{2}$ inch felt was then cut to fit snugly into the tray. A second piece, $\frac{1}{2}$ inch less wide and long was laid upon this. Two pieces of $\frac{1}{2}$ inch sponge rubber equal in width to the second piece of felt were then cut out. The rubber was cut so as to allow a space between the two pieces when placed in the tray. Another $\frac{1}{8}$ inch sheet of aluminum was cut equal in dimension to the layer of felt and drilled as the tray to remove "drumminess." Aluminum angles were also screwed to this piece for rigidity and between them in the middle of the bed were screwed two steel stanchions to support a new slide for the Bell & Howell camera. The upper surface of this bed was covered with a layer of $\frac{1}{2}$ inch sponge rubber.

When these layers were properly aligned in the tray, a bolt hole was drilled in each of the four corners and a long, washered, and rubber-hose encased bolt was inserted and a nut screwed on the bottom side of the tray so that the bed which really floats could not slide out of position during any camera maneuvers.

Although R. C. A. markets a gear reduction motor which fits a Bell and Howell camera with no other support than its snout for synchronously driving the camera, our camera is driven by a 220-V, 60-cycle, 3-phase, $\frac{1}{10}$ horse-power G-E motor of standard design with an added 5 to 4 reduction gearing of our own manufacture. Since this motor is too heavy to support its own weight, it was necessary to make a special sliding table to support the motor in proper alignment with the stop-motion shaft. This latter unit was composed of a piece of $\frac{1}{4}$ inch aluminum $7\frac{1}{8}$ inches square held by four space washered screws to the tray. A second piece of $\frac{1}{4}$ inch aluminum $8\frac{3}{8}$ inches by 6 inches to which the motor is securely fastened is held by four guide screws in slots and by a locking screw to the fixed plate. This construction permits the motor to be drawn back from the camera so that the latter may be slid over on the rack for aligning the slot. The leads for this motor as well as for the "marking lamp" are brought in through the base of the tray and bed.

The camera is a "silenced" Bell & Howell. The interior and exterior surfaces have been covered with a layer of $\frac{1}{4}$ inch sponge rubber and the dissolving gears have been removed. When in use, the motor is pulled back and the scene to be photographed is lined up as with an ordinary Bell & Howell on an open tripod. When the slot is aligned, the camera is pulled into shooting position, the motor is pushed into engagement and locked fast, the turret is thrown over, and the viewing finder is matched. The marker lamp is also checked.

Upon the tray and over the camera and motor, the second unit which is entirely independent is placed. This "bun-

Continued on Page 42



THRU the LENS

of the CRITIC

"FAITHLESS"

photographed by **Oliver Marsh, A. S. C.**

IN THIS production, Oliver Marsh, A. S. C., has turned out one of the finest examples of cinematography that I have seen in a long time. His treatment throughout is intensely pictorial, but in every scene the pictorial is always properly subordinated to the dramatic requirements of the action. The production covers a wide range of settings, from Park Avenue palaces to squalid tenements, while the action embraces as many different moods. Marsh's photographic treatment invariably makes the most of every setting, and is perfectly keyed to the mood of the dramatic action. In addition, Marsh reveals a new Tallulah Bankhead in this production—a person uninhibited by camera-consciousness, and in no way resembling the indifferently-photogenic star of the previous Bankhead films. For the first time, Miss Bankhead is able to appear on the screen as attractively and as forcefully as she did on the stage. Marsh is to be complimented upon this achievement—and Miss Bankhead is to be congratulated.

"WILD GIRL."

photographed by **Norbert Brodine.**

HERE is another example of beautiful photography, though of an entirely different genre. "Wild Girl" is the revised "box-office" title of that famous tale, "Salome Jane." Practically the entire production was made in Sequoia National Park, against the highly pictorial background of the "big trees." This location, of course, introduced some considerable photographic problems, but Brodine's skill at once made light of these, and reaped the utmost in pictorial value from every shot. In neither the day shots nor the many night-effects sequences is there any hint of over-correction; nor is there in any scene any suggestion of artificiality. It is a welcome thing, indeed, to see a film like this, which has been photographed by a man whose work during the past four years has confined him almost exclusively to the studio stages, and find such a complete mastery of exterior cinematography. There is likewise a very pleasant variation from the conventional method of lap-dissolving from sequence to sequence; from the opening title to the end, the film is treated like a book or album; as each scene is over, the page is turned to the next, making a very novel and smooth transition. The Fox Optical Printing staff is to be congratulated upon the execution of these effects, as is the unnamed individual who conceived them. It might possibly be said that this device was used a trifle too frequently for perfect taste, but the idea is so refreshingly new that its abuse can be forgiven—provided it is not repeated in other productions.

The only genuine criticism that can be levelled against this film is the neglect of the possibilities of tinted-base positive stock. The entire picture is printed on "Candle-flame" tint; since they were willing to go to this length, why could they not complete the job, and use a tint which

—like "Peachblow" or "Verdante"—would be warmer, and better suited to the Big Tree country location? The night scenes would have benefited enormously had they been printed on "Azure" or "Nocturne" stock. As it was, with the picture as a whole photographed in a relatively low key, it was difficult to differentiate between the night and day sequences. Moreover, most of the night sequences were sufficiently long so that the laboratory problems presented by the use of tinted stock would have been minimized.

"THE MOST DANGEROUS GAME."

photographed by **Henry Gerrard.**

HERE is a real cameraman's picture, for it was directed, supervised and photographed by cameramen. Merian Cooper—of "Grass" and "Chang" fame—supervised, while his erstwhile partner in crime, Ernest B. Schoedsack directed. Henry Gerrard found this as his first assignment after a long stay in England; and if his work on English productions was as beautiful as this, I don't see how John Bull ever let him leave the country. Although a horror-drama of the horrors, "The Most Dangerous Game" is one of the most highly pictorial films of many months. Every scene is first of all pictorial—though that does not mean that the directors forgot to include the properly thrilling dramatic action. But, first and last, this film is pictorial, and rendered doubly effective by a generous use of glass and matte shots, for which Verne Walker, A. S. C., and Lloyd Knechtel were responsible.

"CHANDU, THE MAGICIAN."

photographed by **James Wong Howe.**

THE real magician in this case is not the mythical "Chandu," but a very real Chinese gentleman, "Jimmie" Howe. Jimmie—aided and abetted by the Fox Special-effects Department—has put more real magic into this picture than a carload of "Chandus" could dream of. In between his playful tricks of turning rifles into snakes, strewing "doppelgangers" around the Orient and making "Death Rays" function, Howe has done some very beautiful and legitimate pictorial cinematography. Bill Menzies—not so long ago the acknowledged dean of Art Directors—co-directed this piece; if he maintains the pace that he has set in this and in "The Spider," he may yet make atonement for the loss that the industry suffered when he deserted his drawing-board.

"FREE, WHITE AND TWENTY-ONE."

photographed by **J. Roy Hunt.**

HERE again a director has run amuck with a camera. In some directors, this might have been overlooked, but Dudley Murphy has on several other occasions shown that he really knows how a camera should be used; so his fall from grace in this production is inexcusable. "Free, White and Twenty-one" (nee "Sport Page") sets a new all-time record for purposeless perambulation. Roy Hunt

Continued on Page 46

THE MONTH'S THREE BEST



Norbert Brodine

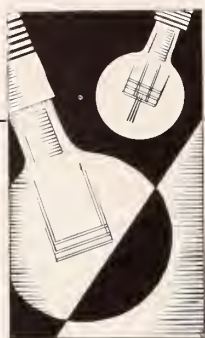


Henry Girard

● THE THREE men pictured on this page were selected by our reviewers for their outstanding photography in the productions reviewed in this issue. Their work was not only consistent, but exceptional in many of its phases. They deserve that special attention be drawn to their efforts in the respective pictures which they photographed. Their achievements should not be taken as a matter of course, therefore American Cinematographer elects them the "Month's Three Best Cinematographers."

Oliver Marsh





IN THE

with

Emery Huse, A. S. C.

LABORATORY

This is Mr. Huse' seven-teenth paper on the principles of sensitometry and their practical application. This particular installment has to do with

DENSITOMETRY

ALTHOUGH in one of the previous articles in this series the term "Density" as applied to photographic sensitometry was briefly defined, it would be well at this point to enter into a more detailed explanation of the meaning of the terms "Opacity" (O), "Transparency" (T) and "Density" (D). These terms are used very frequently in sensitometric discussions and refer particularly to the laws governing the absorption of light by developed silver deposits.

The term "opacity" applies to the resistance of a substance to the passage of light. Let us assume that we have a light of a certain intensity falling upon an object at some finite distance. If a semi-transparent substance is introduced between the light source and the object a certain amount of that light will be held back from the object. In other words, the interposed medium absorbs a quantity of the light incident upon it. Mathematically, this may be

expressed as $\frac{I}{I_0}$ where I is the incident light and I_0 the

transmitted light. Opacity, therefore, is the light stopping power of the interposed medium.

The reverse of opacity is "transparency," this being the measure of the fraction of the incident light which passes

through the medium, or $\frac{I_0}{I}$.

It was Hurter and Driffield who first introduced the term "density" to photographic terminology and it was based upon a definitely accepted law of absorption. They termed the amount of light stopping power of the interposed medium as density and defined it as the logarithm of the opacity or the logarithm of the reciprocal of the transparency.

A simplified expression of the definition of density is

$$D = \log O = \log \frac{I}{T}$$

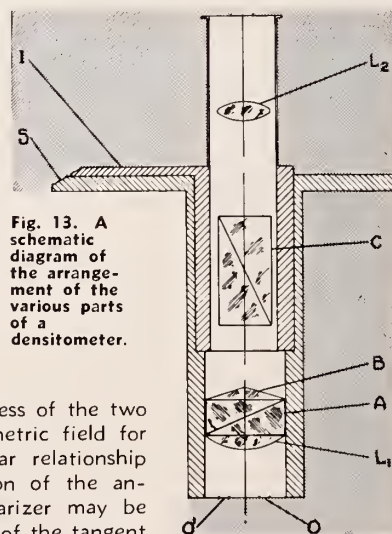
The physical instruments by which density of silver deposits are measured are of several types. Hurter and Driffield's original instrument was of the bench photometer type involving the use of the inverse square law for the computation of illumination values. Since that time many types of physical densitometers have been made but inasmuch as the purpose of this series of articles is to give a little greater insight into the subject of sensitometry as applied specifically to the motion picture industry, we shall not spend any time in a purely historical resume because there are two definite types of physical densitometers available and actually in use in motion picture production which should be discussed in some detail.

One of the types of densitometers which is in use at the present time is known as the Martens polarization photometer, of which the Bausch and Lomb photometer is an adaptation. The Martens instrument depends upon an op-

tical system consisting of a polarizing device used for the production of a beam of plane polarized light and another device called the analyzer of the same or similar type, which may be placed in alignment with the polarizer and by rotation of the analyzer the intensity of the light transmitted by the combination may be controlled. The intensity of the light transmitted by such a combination of polarizer and analyzer depends upon the angle between the polarization plane of the two elements and this intensity may be computed precisely by well-known laws of optics.

Figure 13 shows a schematic diagram of the arrangement of the various parts. Two beams of light enter the instrument through two circular apertures, O and O', each approximately 6 mm. in diameter. Both of these beams are polarized by means of the Wollaston prism, A, which splits the light into two components, one of which is polarized in a plane perpendicular to that of the plane of polarization of the other. On the upper face of the Wollaston prism is cemented a Fresnel biprism which forms the photometric field. The analyzing prism, C, is of the Nicol type. The lens, L_1 cemented to the lower face of the Wollaston prism, is a field lens, while L_2 is the eyepiece lens. The analyzing prism, C, is supported so that it may be rotated about the optical axis of the instrument, its orientation being indicated by the index, I, reading on a scale, S, which remains in a fixed position relative to the Wollaston prism, A. The photometric field as seen by the eye placed at the exit pupil of the eyepiece is circular in shape, divided along a diameter by an image of the apex of the biprism, B. The field thus consists of two juxtaposed semi-circular areas, the relative brightness of the two being controlled by a rotation of the analyzer, C. One-half of this photometric field is illuminated by light which enters the aperture O, while the other is illuminated by light which enters the aperture O'. If the intensities of the two beams entering the instrument are equal, the two halves of the photometric field will be of identical brightness when the index, I, reads at 45 degrees on the scale, S, or at a similar position in each of the other three quadrants of the graduated scale, S. If an absorbing material is placed over one of the apertures (either O or O'), the two parts of the field will no longer be of equal brightness, but by rotating the analyzer, C, the equality of brightness can be restored.

The relative brightness of the two parts of the photometric field for any specified angular relationship between the position of the analyzer and the polarizer may be computed by means of the tangent



Continued on Page 38

REASONS

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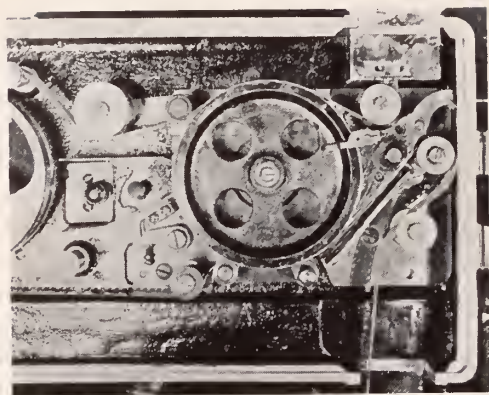


Figure 2

Split Film Recording

WASTE is difficult to control, particularly when a chaotic condition exists such as we had four years ago, when sound appeared in the motion picture business. The immediate problem was to complete a satisfactory product. Later, the apparatus supply became sufficient, and, even more important, studio and exhibition personnel, both executive and operating, grew more cognizant of the principles and practices involved. Limitations which had existed were removed, and the sound organizations were more nearly able to assume their full constructive position in the business. With improved mutual understanding, many steps have been made practicable, leading to the simplification and better coordination of the various processes in producing a picture. Even now, however, we are some distance from the ultimate, because, perhaps, of economic reasons and of the difficulty of rapidly making changes of a revolutionary nature.

One outstanding item in picture cost, though a relatively small one, is the cost of the raw film stock used for sound purposes. To use an inch width of film to accommodate a sound track less than an eighth of this width, and to continue to do this on lengths of many millions of feet, is manifestly a gross waste. Many methods have been discussed for using narrower film, but for various reasons no action was taken for a long time to put them into practice. The closest approach was the use in some studios of both sides of the film for certain types of sound track, where either track could be used, provided no cutting was necessary. Finally, toward the end of last year, an analysis of methods and equipment at the Metro-Goldwyn-Mayer Studios indicated a solution which has since been put into practice with complete success. This experience has resulted in similar analyses by other studios, and the adoption of split or narrow film methods in many organizations where a benefit was found to be derived.

Several somewhat diversified practices have thus been evolved to save sound film. For example, the film may be split at some stage in its progress; or, on the other hand, it may seem best never to split the film, but rather to concentrate on a saving in the use of original film, and to provide means of again using the other side in case the track on the first side is not acceptable for the picture. The choice rests upon the detailed procedure in each studio, and upon its adaptability to the proper modifications to get the most out of the system adopted. Thus, at Metro-Goldwyn-Mayer, the film being split after development happens to work out best, but this may be quite untrue in another organization.

The Metro-Goldwyn-Mayer split film process is based upon the idea of using standard 35 mm. film up to and including the laboratory processing, and then splitting it in half—to 17½ mm.—negative and positive alike. Re-

cording procedure is such that after a roll of film is run through with a record made on one side, the take-up magazine containing the exposed film is reversed and inverted, and becomes the feed magazine for a complete recording upon the other side of the film. This double track film goes to the laboratory, and is processed in the standard 35 mm. developing machine in the usual manner. After drying, the film is split in two, whereupon the individual takes are broken down for printing. The printing operation is similar in principle; that is, prints are made on both sides of a 35 mm. film, which is processed on standard machines, split after drying, and then becomes available for editorial use in the 17½ mm. form.

A number of equipment changes are required to accommodate the new size film. Consideration of the details involved showed clearly that the least practicable arrangement would be that which entailed any modifications in developing machine equipment. This equipment had just been installed and its operation had reached a state of perfection which it seemed unwise to disturb by introducing a new set of requirements. In addition, estimates of the total cost and complication of making the necessary changes in other types of equipment were low, even including the limited amount of design and development expense required. Moreover, there is the important factor of a strong aversion on the part of all concerned toward processing 17½ mm. film in production quantities, based upon cost and difficulty of handling.

An adapter is needed on the recorder, for the upper magazine, which fits the latter in either its regular position or reversed. One form of such a device is shown in Fig. 1. Two hinged pieces are mounted on the magazine opening in the recorder, such that with one in place and the other swung out, the opening is identical with the standard design. Reversal of the position of these hinged pieces produces a magazine opening which is the reverse of the standard arrangement, and permits the magazine to fit in place with the normal rear side to the front. The standard hold-back device is still applicable on the upper magazine, except for the removal of its original mounting on the recorder and provision for mounting it directly on the magazine itself.

It is desirable to install an anti-buckle device in the recorder and to include with this a means of stopping the machine when the end of the film runs out of the feed magazine. Both of these are important; the former because the machine may not be opened for any purpose until the complete roll of film is run out; and the latter to prevent having to carry the take-up magazine back to the loading room to retrieve the end of the film after the first run through the machine. Fig. 11 shows a method of meeting this requirement. If a buckle starts, it causes film to push against a long, light lever, which trips a contact. The film end release is a shoe riding on the center of the film, and arranged to drop into a recess in a roller when the film runs out, the movement of the shoe serving to trip the same contact. This contact controls a magnetically operated spiral spring clutch between the driving motor and the recorder, thus removing power when the contact opens and allowing the recorder to stop in about five inches of film.

Because of the use of both sides of the film, the record-

Reduces Production Costs

by

Wesley C. Miller

Chief Engineer, Sound Department,
Metro-Goldwyn-Mayer Studio.

ing lamp must be cut off while the machine stands still, to avoid fogging the whole length of film inside the box. A magnetically operated shutter accomplishes this, and also serves as a synchronizing mark on the sound track.

It is obviously impossible to open the recorder between takes to mark production data on the film. However, some time previous to the adoption of split film recording, the studio had put into effect a scheme of logging camera and sound takes, which had been working successfully. By means of this, slating time on sets is greatly reduced, and the records of the cameraman and recorder operator are used to identify the film until a title slate can be applied in the laboratory. Start marks are obtained through the use of a camera fogging lamp operating in coordination with the sound track shutter. In a studio where such a system is not in operation, temporary hardship might be felt in initiating it, but its practicability has been proven by several months' experience with it. As matter of interest, camera and sound negative are never brought together at any stage of the entire process, all synchronizing and assembly being done by separate groups using the film logs as their instructions. In this respect, visible double edge numbers on the sound negative stock are an advantage.

Modifications are required in all reproducing apparatus, including dummies, master projectors, moviolas and preview dummies, in reels, numbering machines, footage counters and splicers. In addition, a film splitting machine is necessary. In spite of the imposing array of apparatus involved, the changes in each piece are of a simple and inexpensive nature. Their details are fairly widely known by this time, and a description of them here is unnecessary, as they are mostly of a very obvious nature. It is sufficient to point out that they have been completely successful in operation.

Splitting sound negative film at present demands that the release negative be completely rerecorded. The first reaction to this is that a degradation of sound quality will result. Closer examination reveals that such is not the case. In the first place, fully one-half of all release work must be rerecorded because of the introduction of material in addition to the originally recorded sound. Second, the relative volume levels may be more easily and permanently controlled, as it becomes possible to adjust them to the complete satisfaction of the producer without having to trouble with quality variations due to light or dark prints. This is an important factor when the replacement parts and re-release problem is considered. Original release prints may be made in the home laboratory in close contact with the sound organization. Additional prints made elsewhere will usually be handled differently, and in spite of the best intentions, irregularities in volume level can easily result.

Recording technique has progressed considerably, and in its present state can, with care, produce remarkably good

copies of an original. Any slight quality variations which may be produced by rerecording have been found to be outbalanced by the improvement made possible through being able to finally touch up and adjust the released sound. Oddly enough, full rerecording of the release sound has also resulted in a net saving in the elapsed time between the completion of the editorial work and the beginning of production printing. Even when, later on, release printing from half width, single sprocket hole, film is recognized as feasible, the present indications are that no change will be made in the practice of completely rerecording.

Some criticism has been made that sound quality would suffer from the use of a single set of sprocket holes. It is our present opinion that this is not the case. Flutter and frequency tests, as well as listening tests, indicate that the reverse is true, namely, the sound reproduction averages better than with full width film operating with two sets of sprocket holes. The probable reason is that the half width film has but one set of shrinkage and perforation conditions to adjust itself to rather than having to alternately try to fit first one side and then the other of the various sprockets it passes over.

The theoretical saving, due to splitting film, is one-half. This value is impossible to achieve because of the short end problem, which is proportionately the same whether the film is split or not. Moreover, it is necessary, with this method of splitting, to run out a certain amount of film on the side opposite a previously exposed track, as the film may not be removed from the recorder without doing this, or the previously recorded side will be ruined. In one sense, this run out silent track is a loss, but broadly speaking, a large part of it is absorbed in the editorial and release processes as leader or silent track, which relieves for other purposes film which had previously been diverted for leader use. Such lengths of film may easily become waste, unless their use and handling are controlled. Here, again, the studio organization is obtaining practically full effective use of this material.

The actual saving in purchased film during the past six months since split film has been used throughout, has averaged about forty per cent, as compared with the theoretical fifty per cent possible. This amount, while small compared with total picture cost, amounts to a distinct saving, particularly as it is obtained without any sacrifice of quality or ease of operation in the studio. It is already sufficient to cover the cost of all equipment changes with a comfortable margin to spare. Finally, the entire change was put into effect with the greatest of ease, and entirely without loss of time or production film. Its success in the Metro-Goldwyn-Mayer Studio has been established beyond doubt, and it is contemplated that in some similar form it will be a permanent feature of production.

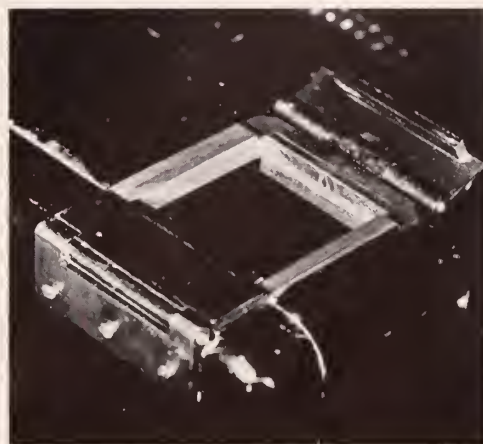


Figure 1

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\$1,000 in Equipment

First Prize.....\$500 cash

Third Prize.....\$150 cash

Second Prize.....\$250 cash

Fourth Prize.....\$100 cash

ALSO

BELL & HOWELL COMPANY will present to winners who have made their pictures with a Filmo

1st—A choice of a Filmo 70DA camera listed at \$280.00 or a Filmo Model J. L. Projector listed at \$298.00.

2nd—Choice of Standard Cooke Telephoto Lens values \$60.00 to \$95.00.

EASTMAN KODAK CO. for finest example of photography in any out-of-doors picture whether it wins cash prize or not and without consideration of story subject:

A Model K. Cine Kodak, with a f.1.9 lens complete with carrying case, priced at \$150.00.

MAX FACTOR MAKE-UP STUDIOS will present one of the famous Max Factor Make-Up Kits, completely equipped, to the winner of first prize.

HOLLYWOOD FILM ENTERPRISES, INC., offers to the person or Amateur Club located in California, who enters the best 16 mm. or 9½ mm. picture from California, regardless of whether it wins cash prize or not:

A Model B. Cine Voice, Home Movie Talking

Picture Machine complete with carrying case, priced at \$129.00.

May be attached to all projectors.

HOME MOVIE SCENARIOS, INC. To winner of first prize, one scenario (choice), one HMS Matte-box, choice of any HMS filter and one HMS Scene Slate.

To winner of second prize, one HMS Matte-box and choice of any HMS filter.

If first prize picture is made from an HMS scenario they give an additional cash prize of \$100.00.

If second prize picture is made from an HMS scenario they will give an additional cash prize of \$50.00.

If third prize picture is made from an HMS scenario they give an additional cash prize of \$25.00.

METEOR PHOTOLIGHT COMPANY will present the winner of Fourth cash prize the following equipment:

A Meteor Double Photolight complete with 500 watt Neron bulbs, retail price \$30.00.

A Meteor Photolight Tripod complete with Neron bulbs, retail price, \$18.00.

Meteor Photolight Table model, complete with bulb, retail price, \$13.50.

ONLY A FEW DAYS LEFT TO ENTER!

HERE ARE THE RULES . . . READ THEM

This contest is open ONLY to AMATEURS. No professional cinematographer will be eligible to compete.

The contest ends at midnight of October 31, 1932. All pictures must be entered by the closing date or they will not be considered. Entries mailed or expressed bearing the date of sending will be accepted if they reach THE AMERICAN CINEMATOGRAPHER office after October 31, 1932, providing the date shows they were sent before midnight of October 31, 1932.

Pictures submitted in this contest will be judged upon photography, composition, direction, acting, cutting and entertainment value. And only silent pictures will be eligible for the contest. The judges, whose names will be announced later, will include outstanding and widely known Cameramen, Directors, Actors, Writers and a group of nationally known Motion Picture critics from some of the best known newspapers in America.

The decision of the judges will be absolutely final, and there can be no appeal from their decision. Announcement of the awards will be made as soon after the close of the contest as possible and checks will be mailed the winners.

Pictures may be submitted either by individual amateur movie makers, or they may be submitted by Amateur Movie Clubs. However, they **MUST** BE photographed on 16 millimeter or 9½ milli-

meter film. Accompanying each entry must be a sworn statement to the effect that no professional cinematographer assisted in the making of the picture. No pictures will be accepted which were photographed on 35 millimeter film and then reduced to 16 millimeter.

This contest is open to amateurs and amateur clubs anywhere in the world, with the following conditions.

Only Bona Fide Subscribers to the American Cinematographer Can Compete

If you are a paid-up subscriber to THE AMERICAN CINEMATOGRAPHER you are eligible to enter the contest. If you are not a subscriber just send in your check for a year's subscription and you are eligible.

In the case of Amateur Clubs the following rules apply:

If a club with a membership of 20 or less wishes to enter a picture, the club will have to have a minimum of 5 subscribers among its members. Any club with more than 20 members will have to have a minimum of 10 subscribers among its members. For any further information you may desire, write the Editor of the American Cinematographer, 1222 Guaranty Building, Hollywood, Calif., or consult your photographic supply dealer.

IF YOU WISH TO ENTER THIS CONTEST AND ARE NOT A SUBSCRIBER, MAIL COUPON TODAY

AMERICAN CINEMATOGRAPHER, 1222 Guaranty Bldg., Hollywood, Calif.

Enclosed please find Check, or Money Order, for \$3.00 (\$4.00 foreign) for which kindly enter my subscription to THE AMERICAN CINEMATOGRAPHER for one year:

Name.....

Address.....

It is understood that this subscription makes me eligible to enter your \$1000.00 Amateur Movie Contest.



WHEELS OF INDUSTRY

● The Galon Manufacturing Company has announced an automatic rewind for the amateur which automatically rewinds the film as it is projected.

It is their claim that it gives the film longer life, due to the fact it is not exposed to the dust for any appreciable length of time; less handling of the film; and it is stored in a fireproof humidor.

While it is their claim it can be used with practically all projectors, they do not list the projectors for which it is available.

● From London R & J Beck, Ltd., announce their new Focostat Cine Viewfinder, for which they make the following claims:

"This finder has been specially designed and computed to overcome the disadvantages usually found in similar devices for use with cinematograph cameras.

"In the Focostat viewfinder the image appears of the same order of brilliancy as the actual object. There is no ground glass or other dispersing medium in the focal plane, so that the image seen neither loses its brightness nor its critical definition.

"What is actually seen is a large, brilliant, erect image visible with both eyes from any reasonable distance behind the viewfinder.

"No focussing of the viewfinder is required, objects at all distances being simultaneously sharply defined. Due to the computation of the lenses and the original construction adopted, the definition given is of a very high order.

"The Focostat viewfinder is constructed for use with any lens from $1\frac{3}{8}$ -in. focus to 8-in. focus. The mask which limits the view observed can be varied in size by the rotation of a milled head. This head is marked for the various lenses and can instantly be set. The size of the mask can, of course, be set to any opening within its range, so that lenses of odd focus can be suited. There are no loose masks with their attendant disadvantages.

"An entirely new feature of this viewfinder is the provision of an indicator line, at the correct distance from the side of the mask, to show the amount of film occupied by the sound track. This indicator works automatically with the mask, so that its position relative to the mask is always correct. The field of view is bounded by a narrow border of green transparent material, so that when the mask is closed down objects just outside the picture can be seen.

"The finder can be made to suit any camera, and can be fitted on either side.

"An accurate cam tilting device is incorporated, by means of which the finder is adjusted to suit objects at different distances. The controlling drum can be scaled to suit any make of camera or blimp. A disc of white celluloid is attached to this drum to enable the operator to mark any special distances he may wish to record.

"A socket is provided for fixing on a small tripod to enable producers to obtain an accurate idea of the pictorial value of the set."

● A new printer has just been developed by Andre Debie of Paris to reduce 35mm. film to 8mm. Two 8mm. prints are obtained at the same time on the 16mm. film used in the printer. The film is split after developing. Debie announces a small developing machine 7 ft. long, 6 ft. high and 3 ft. wide. Also a perforating machine for 8mm. film.

● Cameras being made by the Eastman Kodak Company are being shipped across the ocean in both directions, according to a news dispatch from that company.

Their European Cameras are selling in the United States while the American Kodaks are selling in Europe.

The explanation is that America leads in the manufacture of high-quality, low-cost instruments when the demand is sufficient to permit large expenditures to be made for tools and special machinery. Europe leads in the production of cameras equal in merit when a specialized and smaller demand makes machine tooling impractical.

Consequently, the United States is in a successful competitive position in the European market for standardized cameras like the Kodak. Europe, on the other hand, has the advantage in the American market for a variety of specialized cameras appealing to advanced amateur photographers but not sold in large quantities.

● The new Bell &

Howell scraper unit which they have just perfected removes emulsion in splicing by very much the same method as the professional, according to their claims. They also state in their announcement that this dry scraper

can be attached to any B & H 16mm hand splicer outfit. In view of the fact that this new scraper needs no moisture it is the contention of the manufacturer the work is done faster and is preferable in that it is set to the right cutting depth.

● The Bell & Howell Company has extended the guarantee of their Filmo Cameras and Projectors from two to three years. Their Eyemo 35mm Cameras are also covered by this new guarantee.

An additional new feature of the Bell & Howell guarantee is the provision for free annual cleaning and lubrication for the duration of the guarantee. Under the terms of this provision, the owner may have his camera and projector thoroughly gone over once a year for three years. It is expected that this free service will be commonly requested just previous to periods of intensive equipment use—for instance, on cameras, in the spring, ahead of the vacation season. Thus users can, without cost, assure themselves in advance of carefree operation when such operation is most desired.



FROM REGULATED "INKIES"
TO MERCILESS DESERT SUNSHINE

EASTMAN Super-sensitive Panchromatic Negative with gray backing provides a medium that producer, cameraman, and laboratory alike can endorse without reservation. It is amazingly adapted to every type of illumination, from carefully controlled "inkies" to merciless desert sunlight. As an all-purpose film it exactly meets the demands of unusual economy in production as well as extraordinary quality in results. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN **SUPER-SENSITIVE**
PANCHROMATIC NEGATIVE (GRAY-BACKED)



KEEPING UP with the AMATEUR

THAT the Amateur Cinematographer is displaying the same ingenuity in the solving of many of his simpler problems that made the amateur radio builder a known quantity in that field is becoming a bit more evident as these thousands of workers in the field of cinematography step a little more into the limelight.

Organized as many of them are into clubs, they have a producing power in their field that makes them almost equal to a completed unit in one of the largest studios. Mass activity, many have discovered, is bringing them pictures that would be utterly impossible for the average amateur to procure. Not only subjects that are wide in their scope, but a variation of viewpoints to complete the whole that is startling to many of them in the completed picture.

Big events are proving fine subjects for clubs to concentrate upon with their cameras. During the recent Olympic Games in Los Angeles, the Los Angeles Amateur Cine Club organized their membership with a view of obtaining a complete historical record of that event. Members were deployed in every section of the stadium so that every conceivable angle of the events could be placed on film. They sat in the bleachers, in the grand-stand, close to the starting point, at the finish line, up high so as to get long shots and angle shots, underneath for the diving events, close to the judges to get a shot of the winner. In fact amateur cameras were trained on every event in such numbers and from such strategic positions, that the organization of this bit of producing would have done credit to a general of the industry.

Thousands of feet of film were shot, much of it, of course, cannot go into the finished production of the "10th Olympiad" but what remains will still be a fine record for each individual for a picture in his own library.

When all film was turned into the club headquarters a committee was appointed to cut and edit the 10,000 feet submitted to them by their members into a comprehensive subject that would be a faithful record of the event.

Just one phase of this alone demonstrates the wonderful value of this combined work; the 10,000 feet of film that was shot. No one man would have dreamed of exposing this footage on an event even as big as was the Olympiad in the world and history of sports, but here through the combined efforts of many, a club subject has been produced that will not only have interest through the years, but with the coming of the next and subsequent Olympiads will be of tremendous historical value.

Wayne Fisher is the president of the Los Angeles Amateur Cine Club and Perry Bacus secretary. Among those on the committee to edit the Olympiad subject in addition to the officers are: Fred Champion, Church Anderson, Tracy Q. Hall, Frank B. Skeelee, Dr. W. R. Maiden and E. G. Chapman.

Another club production that demonstrates the value of mass activity is the plan being operated by the Portland Cine Club of Portland, Oregon.

Here we find a club determined to demonstrate a bit of civic pride in a picture which they have entitled "At the End of the Oregon Trail."

This picture was planned by the club late in spring so that many of their members who would be touring during the summer throughout the state would have something definite to shoot for the club picture. A complete and comprehensive scenario was outlined. Titles were written and a copy given to every member of the club, so that no matter in what part of the state of Oregon they might find themselves there would be something they could shoot for the club production.

The opening art titles of the picture will depict the pioneer in his early struggles to reach Oregon. Throughout the pictures the titles will be remindful of these early settlers, while the subject matter will be present day scenes throughout the state, opening with Highway scenes along the Columbia River, then going into the fine waterfalls that abound in that state with shots of scenic beauty that hit you at every curve of the road. Agriculture and the big cities will come in for their share as will the shipping industry and airplanes that lead into Portland. Lumber, one of the chief industries, as well as fishing, will be given a place in the picture. Also sports has not been overlooked.

While the picture has not been completed, it is expected by the officers of the Portland Cine Club that their finished production will be one of the finest records of their state and a picture for their club library that will be in great demand, and perhaps one that will settle many arguments as to which amateur found the best spot in which to vacation.

Photographing Through Reading Glass

OLD mother necessity teaches us many a trick. Arthur R. Powell of Azusa, California, decided to photograph the silkworm from the egg to its full growth. For some of us who are of a nervous temperament this may seem a tedious task to set for oneself, but Powell started it and determined to see it through to the bitter end.

He wanted a close-up. He couldn't shoot through the

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Eggs of Silk Worm taken from 16 mm. film

Silk Worm photographed through ordinary reading glass



This Camera Cuts Movie Costs Nearly $\frac{2}{3}$...

*The Ciné-Kodak Eight
Makes Every Foot of
Film Go as Far as Four
... Costs Only \$29.50*

MOVIE MAKERS everywhere have hailed Ciné-Kodak Eight as the biggest news since home movies began.

First there's the low initial cost of the camera—only \$29.50. Then there is the new operating principle that actually cuts film cost $62\frac{1}{2}$ per cent.

You buy special 16 mm. film for the Ciné-Kodak Eight in 25-foot rolls at \$2.25. Only half the width of the film is exposed the first time it's run through. Then the spools are inverted and the other half exposed. As each image is half as high and half as wide you get four images in the space of the usual one.



At no extra charge Eastman processes the film, slits it down the middle, splices it end to end, and returns it on a 50-foot reel, 8 mm. wide, ready for showing in your Kodascope Eight.

See this amazingly capable camera and some of the sparkling movies it makes at your Ciné-Kodak dealer's. There are new thrills . . . new delights . . . in store for you.

EASTMAN KODAK COMPANY, Rochester, New York

Film Sends Alcohol on By-Product Spree

by

Franklin Courtney Ellis

Eastman Kodak Company

WHEN the average person, in or out of the motion picture industry, thinks of film manufacture, he thinks of the finished product, cut-film, roll-film, X-ray film, and so on. Cinematographers may extend this list, because of their more or less intimate knowledge of the hundred different types of film that the photographic market demands; but beyond this, nine out of ten accept the layman's viewpoint, and feel that in so far as film manufacture is concerned, a film factory is rather like a sausage-mill: in go the raw materials at one end, and out at the other end comes the film. But it is hardly so simple as all that. When a film manufacturing plant attains such magnitude that it produces several million feet of film each year, and film of perhaps a hundred different varieties, it faces the same economic problems that confront any other big business enterprise. It must be assured of an adequate supply of raw material, and it must guard against the waste of any possible by-product which may conceivably have some commercial value. In this respect, it is only following the example of the sausage-mill we have already referred to: for anyone who has visited a big packing-plant can testify that Messrs. Swift, Armour, et al, utilize every possible part of the pig except his squeal—and that, it is rumored, they now sell to the Radio people, for static!

Therefore, the film industry must think first of its raw materials, and then of its by-products. Film can be no better than its ingredients. Quality must be kept to high standards, but at the same time, the greatest economy must be observed in their procurement. Some of these raw materials are standard chemical products which, once a definite standard of purity, etc., has been estab-

lished, can most economically be obtained on the open market. Others, however, are best obtained by the manufacturer producing them himself. In some instances this involves the acquisition of some large industry, apparently unrelated to the manufacture of motion picture film.

One such case carries with it the story of an industry, large in its own right, which introduces some of film's "cousins." The raw material in question is wood alcohol.

Motion picture film contains no wood alcohol, yet very large aggregate quantities are used in film manufacture. No mystery lies behind that statement. Wood alcohol is used to dissolve nitrated cotton, but is then driven out of the film "dope" as heat dries the solution into sheet film. Chemically pure wood alcohol—just one material used in film making—was important enough in the manufacturing economy to cause the largest photographic manufacturer to set up extensive lumbering operations in the forests of four states, to build a railroad system, and to establish a plant for turning waste wood from the forest and from the sawmill into chemically pure wood alcohol and other useful products.

In the lumber business, only about 40 per cent of the average tree is utilized as lumber. Part of what is left is used in other ways. For instance, sawdust stokes the fires to run the machinery of the average sawmill. Much of the rest is waste—but what is waste for the lumber industry is raw material for wood alcohol and a number of other products. The lumberjack slashing limbs from a felled oak on a Tennessee mountainside may not even realize that the limbs he removes and loads on a mule-drawn sledge, play a part in the movie show he sees on Saturday night. So too do the rounded slabs sawn from logs in the company's sawmill in the process of squaring up lumber for the market.

Charcoal, the residue after distillation, is an unusual "cousin" of motion picture film, but, as a product of this photographic subsidiary, it is charcoal with a higher education. Even the dust raised in screening the various sizes of charcoal is collected by a vacuum system for briquetting into dining car fuel that cooks the cameramen's meals when they travel to location. The chickens broiled for those meals may also have been fed powdered charcoal—a by-product of the film industry.

Dividing pyroligneous acid into chemically pure wood alcohol and other "solvents" for film making and into wood pitch and creosote oils—by-products—is less remarkable than what happens to the third general derivative of pyroligneous acid—acetic acid.

Acetic acid was comparatively unimportant in the whole scheme of the film industry when the plant for manufacturing wood alcohol was established. The alacrity with which a movie-conscious world has taken to personal pictures, together with the greater use of x-rays since the War, has increased the importance of cellulose acetate, made from acetic acid, in the film manufacturer's economy. Film for these two specific purposes is made from cellulose acetate. The so-called "safety film," rated by the National Board of Fire Underwriters as presenting somewhat less fire hazard than common newsprint paper of the same form and quality, can be used for amateur movies and x-ray work in homes, schools, and hospitals without the projection and storage precautions necessary with cellulose nitrate film. Lack of the needed equipment for adequate precautions would otherwise have greatly restricted two useful fields.

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Alcohol in the Wood

Hunting "Movie" Gold in Alaska

by

V. A. Morgan

ALL of the pleasures of a life-time put together could never equal the pleasures I had last year in my first attempt as an amateur cinematographer, stalking the wild life of Alaska with a 16mm. camera. For years I had done my hunting with a rifle, seeking especially the huge heads of the Dall's Mountain Rams; but from the time I saw my first hunt films moving across the screen, I knew that I was destined to forsake the rifle for the photographic reel. When one is new to the sport of hunting, he derives his greatest pleasures of the chase from making his kill in a neat and sportsman-like manner; but as one grows older in the sport, his interest turns less and less toward the kill, and more and more toward enjoyment of the beauty of wild life. Then is the time that photographic hunting begins to weave its spell, for only in this manner may one preserve the scenic beauty and the glorious movement of the chase.

It is hard to go back into the past and take a duplicate print of anything from your brain—much less to reproduce each movement of an animal so gorgeous in every movement as is the wild ram. With a still camera, you can capture and reproduce the form, but not the movement. But with a cine camera you can reproduce the slightest motion—every glorious bound—at any time, anywhere.

I am therefore happy to be back in Alaska again, once more hunting—but this time with my trusty 16mm. camera as well as my rifle. I have made this trip into the wilds especially to make my second film for THE AMERICAN CINEMATOGRAPHER'S Amateur Film Contest; my first entry—the result of last year's trip—is already in the A. S. C.'s vaults in Hollywood, and I am concentrating on my picture-making this time, hoping to produce a film which will at once be a true picture of Alaskan wild life, and impress the judges in the Contest. But whether I am able to win a prize or not, I know that the new pleasures that are every day revealing themselves to me as I pursue my quarries with the camera will more than repay me for all of the trouble and hardship that such a trip as this necessitates.

And, believe me, hardship is the correct word for it! The wild life of Alaska—at least such of it as I am trying to photograph—does not haunt the regular tourist lanes. Therefore, like Mohammed, I must go to it—and that necessitates traveling afoot into regions where horses can't go, scaling mountains and glaciers with a pack on my back, a small amount of food, a sleeping-bag, gun, camera, films and camping equipment. Such an experience gives me new respect for such hardy professionals as Martin Johnson, Clyde de Vinna, Ernest Schoedsack, Frank Buck and the others who roam the far places to bring back professional films of wild life for our American audiences.

I have just returned from a trip amid glaciers that have

seldom, if ever, been visited by man—much less photographed. Tired from my heavy pack, I camped early the first day out beside a beautiful lake which I have always admired. Throwing my pack on a bed of dried spruce boughs which I had cut the year before, I was ready to turn in when I saw a bull and cow moose step into the knee-deep water and lily-pads a hundred yards away in the lake. I hastily unpacked my camera and a roll of film, and tried with nervous hands to thread the camera; but the moose saw me, and bolted for the sheltering timber before I could get the camera into action. My heart sank . . . Would they return? . . . My only hope was to lie quiet and wait.

In a few moments I heard a limb crack, close by. There they were again! They trotted back to the water, going in up to their stomachs before they stopped. Then they soured their heads deep under the surface, to drive the moose-flies away from their ears. They were within 60 yards of me! Would they stay long enough to let me get a picture—or would the sound of the camera drive them away?

Quickly I set the focus and diaphragm of my telephoto lens, and pressed the trigger. Would the purr of the camera frighten them away? No, they could hear it as they walked slowly toward where I was hidden behind a log, but they seemed not to mind it. I got a good, long scene, then ducked low behind my shelter to rewind. Up again—the moose were much closer by now. When the camera began to purr, they started nervously at the unaccustomed "click-click." Then with a toss of their heads, they turned and loped for the shelter of the timber—while my camera captured every detail of their long strides. My gauge told me I had taken 45 feet of film—surely a good beginning! I turned happily to making camp.

At 11:30 P. M., being unable to sleep, due to the incessant attentions of the mosquitoes, I saw my two moose reappear at the far end of the lake, a half-mile away. At 2 A. M. by my watch I glanced toward the mountainside high above me and saw eleven goat. I was happy, for I knew that I could get the pictures that I wanted. Bear in mind, please, that in Alaska one can see almost as far at midnight in the middle of June as he can see at mid-day, for the sun does not set until 10:30, and then there is only a mild twilight until dawn. At 2 A. M. the sun is once more shining brightly.

Leaving camp, I was thinking of the goat and the pictures I hoped to get, when suddenly a huge black bear appeared in the trail. My camera was in the pack on my

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Shopping for Seal Skin Coats in Alaska



EDITOR'S NOTE: Undoubtedly the most important development now taking place in either professional or amateur motion pictures is that of 16mm. sound-on-film. The best brains of the industry are being applied to the problem, which is every day coming nearer to practical solution. As the matter stands now, the gravest question is that of setting definite dimensional standards for the new system: therefore, in this and several succeeding articles, THE AMERICAN CINEMATOGRAPHER is attempting to present in an impartial fashion the viewpoints of the adherents of the various proposed dimensions.

Motion Pictures

THE admittedly attractive features of motion pictures with sound on 16mm. film have heretofore been obscured by some rather difficult technical problems. Obviously, the greatest advantage of 16mm. film lies in its low cost per reel. This holds true in each of the contemplated fields of application, whether industrial, educational, or home entertainment. On the other hand, the factors that permit this low cost, namely, narrow gauge and low film speed, are the very features that present the most severe technical difficulties in the problem of producing sound from such film.

Were it not for these difficulties there would be very little occasion to discuss standards for 16mm. film. Since the 16mm. field must always depend in a large measure upon 35 mm. sources, it is obvious that the most attractive standard would be a simple reduction from standard 35 mm. sound film in the appropriate ratio 1 to 0.4. A discussion of the penalties involved in any departure from this standard is, therefore, pertinent.

It is evident that the difficulty of resolving the higher frequencies from any film varies inversely as the film speed. For example, a frequency of 6000 cycles on a 16 mm. film, moving at a speed of 24 frames per second (36 feet per minute), is equivalent to a frequency of 15,000 cycles on a standard 35 mm. sound track. It must be admitted that if such a 16 mm. film were to provide only 40 per cent as good quality as was available in the theatres at the time 16 mm. development began, the results would be highly unsatisfactory. It is not surprising, therefore, that many of the early workers in this field devoted much thought to the possibility of relatively higher film speeds for 16 mm. Among the many suggestions that resulted were several that contemplated film speeds of 72 feet per minute, obtained by projecting alternate frames; and others in which the picture is turned through a right angle and the perforations spaced further apart to obtain speed ranging from 45 to 90 feet per minute.

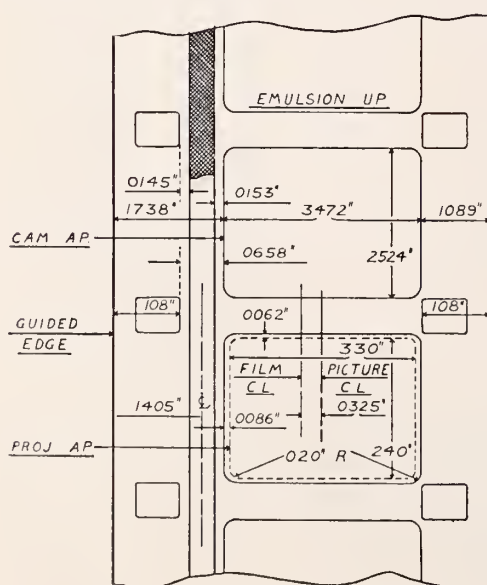


Fig. 1. Optical reduction of sound and picture on Standard 16mm film.

Although each is technically feasible, none of these suggestions are economically practical, most of them being limited by lack of flexibility in production or by excessive film cost. As time passed and as these limitations were more acutely realized, there remained no doubt of the desirability of a simple reduction from existing 35 mm. standards, provided only that the technical difficulties could be overcome and satisfactory results obtained.

Upon further reflection there appears to be some hope that satisfactory resolution of high frequencies can be realized from a film traveling at 36 feet per minute. While it is true that 4/10 of the quality even now commercially available in theatres would still be unsatisfactory, it happens that the film itself is by no means the only important factor in present day 35 mm. quality. Recent work has demonstrated that the film is a very much better transfer medium for sound than much of the apparatus necessarily associated with it. On the other hand, the difference in quality between 35 mm. and 16 mm. film rests entirely with the capabilities of the film itself and of the optical elements associated with it, for the reason that microphones, amplifiers, light modulators, light-sensitive cells, and loud speakers all have characteristics entirely independent of the speed with which the film may move whether in recording, printing, or in reproducing sound.

In view of these facts, the developmental work here described was begun with the idea of adopting a film standard that would offer the simplest production methods at the lowest possible film cost, quite regardless of the technical difficulties to be overcome. Should it later prove that these difficulties were insurmountable or their solution not commercially feasible, some more favorable form of film layout could then be chosen more intelligently with a more accurate knowledge of the relative merits and penalties involved. This determination led naturally to the adoption of straight optical reduction of the present S. M. P. E. standard 35 mm. sound prints. The results of this developmental work have been very gratifying in that this simple optical reduction of 35 mm. sound prints to 16 mm. sound prints has been justified as an entirely practical and very economical means of producing such film.

In making such a film, standard 16 mm. film stock with 2 rows of sprocket perforations is employed, and the sound track occupies a place alongside the picture just as in 35 mm. sound films. The relative dimensions of picture and sound track are practically identical, except that the slightly greater relative width of 16 mm. film as measured between sprocket holes makes it possible to allow proportionately larger unused margins on either side of the sound track, if desired.

On the other hand, the Society has already had occasion to consider a film layout in which it is attempted to obtain a wider sound track without widening the film, at the sacrifice of one row of sprocket holes. Of all the suggestions that have been made for 16 mm. sound film layouts, only this and the simple reduced standard have been seriously considered for standardization by the Society; and it seems appropriate, therefore, to make direct comparison of the essential features of each.

Fig. 1 shows direct optical reduction of sound and picture on a standard 16 mm. film having the usual two rows of perforations and in all dimensions identical with the film

with Sound on Standard 16 mm. Film

by

H. G. Tasker and

A. W. Carpenter*

United Research Corporation,
Long Island City, N. Y.

stock being used for silent 16 mm. projection. The sound track occupies the position that corresponds to 35 mm. film, but is reduced in the appropriate proportions. Since 35 mm. sound film operates at 24 frames per second, the 16 mm. film derived from it must also be projected at this speed, with a resulting film velocity of 36 feet per minute. Consequently, the total length of any 16 mm. sound track must be exactly 4/10 the length of the original 35 mm. track from which it was taken. Since the space available between the sprocket holes on 16 mm. film is very nearly 4/10 that of 35 mm. film, it is appropriate to reduce all dimensions of sound track and picture areas in this proportion.

Having chosen this reduction ratio, it then becomes possible to construct a running reduction printer that will reduce the sound track from the original 35 mm. sound negatives, and will likewise reduce the picture from the original 35 mm. picture negatives. The availability of such a printer to 16 mm. production is a matter of considerable importance, because running printers of this sort do not involve the surface rubbing common to contact running printers, nor the mechanical wear of step printers that so seriously limits the life of the negatives in ordinary 35 mm. printers. This advantage of the running optical printer results from the fact that the two films must necessarily be spaced apart, with an optical system between, and it is a simple matter to design the printer so that no part of the picture area or sound track area ever comes in contact with any part of the machine. In an experimental printer of this kind, a loop of negative film was run through the machine more than 3000 times without showing any scratching or other deterioration of the useful areas.

The arrangement shown in Fig. 2** abandons one row of sprocket holes in favor of a somewhat wider sound track and larger picture area, but the advantages that it appears to offer are by no means unmixed with difficulties. The sound track is now proportionately wider than in the original 35 mm. negative, and hence reduction printing of such a sound track could be accomplished only by means of an optical system that would distort the image sufficiently to give a reduction ratio of only 1 to 0.77 in the horizontal direction, while reducing the image 1 to 0.40 in the direction of travel. This difficulty is by no means

insurmountable but may well be avoided, and it should further be remembered that such a printer could not possibly be employed to print the picture.

The only alternate methods possible are to re-record the original sound track either on 35 mm. or on 16 mm. film in such a way as to obtain the relatively greater width required. The 16 mm. print is then obtained from either of these negatives by normal reduction printing or by contact printing, respectively. In the case of contact printing from one 16 mm. film to another, the effect of grain becomes important and may more than cancel any gain in noise level that might otherwise result from the wider sound track.

The proposed dimensions of the film shown in Fig. 2 are such as to allow a 65 mil scanning line as compared with 84 mils used in 35 mm. work; and the resulting tolerances on either side of the sound track, while photographically adequate, leave very little space for mechanical support of the film, especially as compared with Fig. 1, in which more than 100 mils is available for support on either side of the film. Whether or not the additional scanning line length that can be gained in this manner is worth the risks that must be taken, is a question that must be measured in terms of signal output and volume range. Signal output is of little consequence except as it relates to the problem of amplifier noise, and this is largely a function of the sound optical system, the light-sensitive cell and the amplifier design, which matters will be discussed later.

With any given sample of film and any given technic, the available volume of range will be diminished as the length of the scanning line decreases. For variable-density recording, a 50 per cent reduction in the scanning line length will diminish the volume range by 3 decibels, while for variable width recording, the reduction will be somewhat more than 3 decibels, unless the tolerances between scanning line length and peak modulation are reduced in proportion. Such items as film quality, recording methods, and processing technic may, however, introduce vastly greater changes in the volume range, so that the length of the scanning line, within reasonable limits, is a matter of doubtful importance.

The difficulties of printing a suitable sound track for the layout of Fig. 2 are paralleled by the problem of obtaining

Continued on Page 36

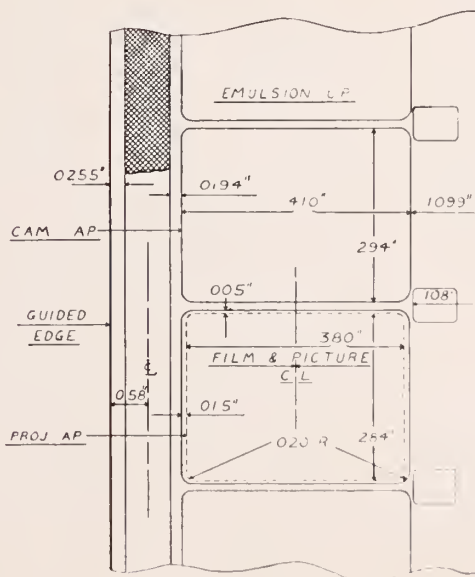


Fig. 2. Arrangement abandoning one row of perforations in favor of somewhat wider sound track and larger picture area.

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**Dimensions shown are modifications of the original proposal, and correspond more exactly to those being considered for standardization.



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Sound on 16 mm. Film

Continued from Page 33

a satisfactory picture of the dimensions proposed. It will normally happen that the original 35 mm. negative from which it is desired to obtain a 16 mm. print will be a sound picture negative, because of a desire to use the same subject for 35 mm. applications. In such a negative, the picture is displaced to one side of the film to accommodate the sound track, and there are substantial spaces between successive frames. Consequently, it is impossible to use such a negative in a running reduction printer to produce the film layout shown in Fig. 2; since it would, in fact, produce precisely the arrangement shown in Fig. 1. This is due to the requirements of all such printers that the mechanical motion of the films and optical motion of the images must exactly correspond. If, on the other hand, the original negative is placed in a step reduction printer and the optical ratio is changed to "blow-up" the picture to the size shown in Fig. 2, the negative will be subjected to the dangerous wear and tear imposed by such printers. It is necessary, therefore, to make a duplicate negative of the picture whenever any considerable number of prints are required; and when step printers are used, a number of such negatives will be necessary to accommodate production on any considerable scale.

In contrast to these difficulties, the layout of Fig. 1 affords the greatest of ease and flexibility in production. A single printer may be used for either sound or picture; and, in the case of combination negatives, for both. It is ready at a moment's notice to produce a sound, picture, or combination print from the original negatives without the delays attendant upon duping and re-recording. The method may be applied with equal facility to any number of prints, whether one, a dozen, or several hundred, with quite negligible depreciation of the negatives. In practice it has been found possible to operate such a printer at speeds as high as 60 feet per minute of 35 mm. film, and speeds of 90 feet or more may be expected. In consequence, the number of such machines required to equip a film laboratory for quantity production will be very small and a capital investment may be held at a minimum.

The projection problems surrounding the two types of film under discussion present similar comparisons. Most users of 16 mm. film are familiar with the tearing of the sprocket holes that often occurs when operating ordinary silent 16 mm. projectors, and considerable doubt exists as to whether a single row of sprocket holes could be expected to endure under the even higher projection speeds

required for sound film operation on 16 mm. In 35 mm. film, 8 sprocket holes per frame are employed, and the film is handled by skilled operators. Under such conditions satisfactory film life may be expected; but there is a vast difference between these conditions and those that the 16 mm. film will encounter in home, school, and office, where the equipment must be operated by persons not necessarily mechanically inclined, and the provision of only one sprocket hole per frame seems very dangerous.

The difficulty of mechanically supporting film of the type shown in Fig. 2 without scratching the sound track area has already been mentioned. In contrast, the layout of Fig. 1 provides ample support on either side of the film. It is often desirable to arrange a machine for alternate use with translucent and reflection screens, and with the film of Fig. 1 the required picture inversion may be accomplished by reversing the film in the gate. With the film of Fig. 2 this is obviously impossible, as the sprocket teeth would then engage the portion occupied by the sound track, with disastrous effect on the latter. For such a film, the needful inversion must be effected by a relatively expensive optical device.

As in the case of sound track width, the somewhat smaller picture area available in Fig. 1 is of considerably less importance than appears from first observation. With a given subject and identical film stock, the pictures resulting from these two diagrams may present discoverable but by no means serious differences. Current developments in finer grained emulsions by this organization and others may soon be expected to yield picture quality which is beyond reproach in either diagram, 1 or 2.

Projectors designed to accommodate either of these sound films are also capable of projecting any existing silent films that the owner may have in his library. In the case of Fig. 1 a lever is provided to change the aperture size from sound to silent dimensions, as desired.

The design of suitable machines to project 16 mm. sound films is perhaps as interesting a development as that of producing the film itself. When 35 mm. sound-on-film was first introduced in the theatre, no attempt was made to replace the original picture projector, but instead, the sound reproducing means was provided as an attachment to the picture projector. The considerable dimensions of the 35 mm. film, and the fact that one or two makes of 35 mm. projector comprised the bulk of the field, made this arrangement feasible. In the 16 mm. field, however, the problem was quite different, for the dimensions of the film are small, the number of different makes of projectors

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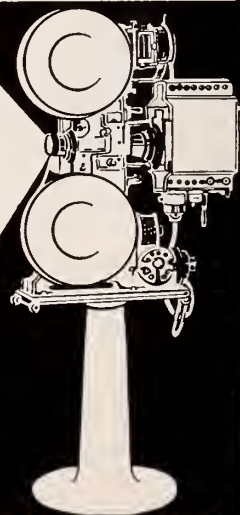
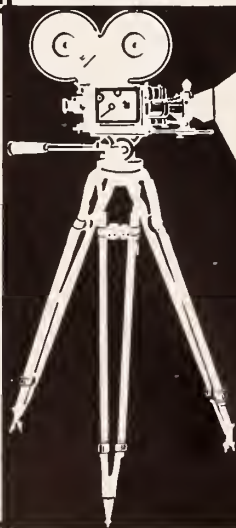
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quite large, and the cost of adding sound to an existing projector, if possible at all, would be a relatively large portion of the cost of manufacturing a complete machine.

Furthermore, most of the 16 mm. projectors now in use were designed without special thought as to quietness of operation. In the 35 mm. field, quietness is not an important item, since the projection apparatus is all enclosed in a fire-proof booth which may also be reasonably sound-proof. On the other hand, 16 mm. projectors are normally operated in the same room with the audience, and if noisy, they must be enclosed in suitable sound-proof cases, which may be quite expensive. For this, and other reasons, it becomes highly desirable to design a 16 mm. sound film projector as a complete unit, and to take such steps as will insure quietness of operation, not only initially, but throughout its life.



Photographing Through a Reading Glass

Continued from Page 28

enclosure he was using with a telephoto, as the work he was doing was within inches of the object at all times. He needed a nice close-up of that old silkworm to give him just what he wanted and was pondering how he would get it without investing in some more lenses, when the reading glass laying on the library table came to his mind and he felt it would at least be worth the experiment.

Holding the reading glass about five or six inches away he pressed the button, and the results were fine. Here a bit of good old American ingenuity not only gave him what he wanted, but must have given Powell a wonderful thrill to think that he solved a knotty problem in a very simple way. For a thrill it must have been as good as a golfer making a hole in one.

We are reproducing a few enlargements of Powell's picture. The one showing the eggs was taken at two inches. The eggs were just ready to hatch. He endeavored to get that action, but the slow motion, and a lot of it, wasn't just up to his patience that day.

The other photo is an enlargement of the close-up scene taken by him through an ordinary reading glass at about a five or six inch focus.



Club's Monthly Contest


THE Los Angeles Amateur's Cine Club conducts a monthly contest giving prizes for the best 400-ft. or less picture submitted to the membership. These contests have been going on for several months. A grand prize will be offered in December by the club to the first winners of the monthly contests who submit what is considered the best picture. The picture entered in December must be entirely different than the subject for which they were awarded a monthly prize.

The winner in the August contest was W. W. Seaman, who presented a very clever and excellently photographed picture entitled "Africa Squeaks." The second prize was awarded to F. B. Skeelee for his "Bear Hunt" in which his 3-year-old son was the "hero."



Cameramen and Newsreels Sign

● The cameramen's unions in New York, Hollywood and Chicago have signed a year's agreement with Pathe News, Fox Movietone, and Hearst Metrotone. It is claimed this move will settle all labor difficulties. Paramount News is expected to sign. Negotiations were conducted by Pat Casey for the Newsreels. The agreement calls for a minimum wage of \$90.00.



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In the Laboratory

Continued from Page 20

square law. Hence for any setting which has been made to equalize the brightness of the two fields, after the insertion of the photometric density is one of the two beams, the magnitude of that density may be directly computed.

This device which we have just defined at length is only the optical part of a densitometer. Around this must be constructed a satisfactory instrument to allow for the precise measurement of photographic densities. This consists of an aluminum casting which forms an almost cubical box in which is placed a high wattage incandescent electric lamp. The top of this box is formed by a sheet of bakelite in the center of which is mounted a disk of white pot opal glass slightly larger in diameter than the nosepiece of the Martens polarization photometer head. The incandescent lamp is placed directly below this opal glass window in such a manner that the opal glass is uniformly illuminated to a relatively high level. The photometer head is mounted on the swinging arm shown so that in the reading position it is directly above and centered on the opal glass window. A metal slide is mounted transversely on the top of this lamp housing and in this slide operates a holder carrying the sensitometric strip to be measured. This is so arranged that the sensitometric densities pass under one of the apertures in the nosepiece of the photometer head, while the other aperture is covered by a portion of the photographic material which has received no exposure but which has received the same development as the sensitometric exposure. In this manner the fog is automatically subtracted in the act of reading the density. In other words, the density of a sensitometrically exposed area is read in terms of the density of an area of the photographic material which has received no exposure in the sensitometer but which has been subjected to development. It is of course possible, if desired, to arrange the holder and the sensitometric strip in such a manner that density is read over the edge of the sensitometric strip and in this manner values of sensitometric density plus fog are obtained. The surface of the photographic emulsion during reading is in contact with the surface of the white pot opal glass. Hence density values obtained in this manner are those of diffuse density and consequently practically identical with the effective printing density of the deposit, provided, of course, the deposit has no selectively absorbing characteristics.



American Equipment Not Popular in Estonia

IT is the claim of the producers of Estonia that because it is impossible to secure information as to whether or not European service is provided by any of the American manufacturers of sound reproducing equipment the German brand is making the greatest headway. Germany and all German manufacturers are said to provide good service through resident agents who employ expert engineers.



DeVry takes over Q. R. S.

ACCORDING to an announcement from Herman A. DeVry, Inc., of Chicago, that concern has purchased the Q. R. S. DeVry Corporation of the same city and will conduct its business from the address of the latter corporation.

The announcement states that it is the plan of the DeVry Corporation to increase its manufacturing schedule. In addition to continuing the DeVry Sound-On-Film Projector the company will also make sound heads for theatrical machines, amplifiers, public address systems and a recently developed 35mm. sound camera complete with amplifier for the popular market.

The 16mm. field will be entered into with a complete organization to handle service and repairs.

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Lighting With Paint

Continued from Page 8

markable, despite the fact that such effects are so common as to be used in almost every feature produced.

It seems almost incredible that the advent of sound could by any stretch of the imagination have affected the work of the scene-painter, yet such has truly proven the case. In the first place, of course, the addition of sound necessitated in many studios radical changes in the materials used for set-construction. These, in turn, naturally affected the painter, for a paint that will adhere perfectly to wood or plaster-board may not be at all satisfactory for use over muslin or burlap. At the R-K-O studios, for instance, we had to develop a special paint. This is more properly a plaster, as it is applied like plaster, on the stretched burlap of which our sets are now constructed, and applied with either a brush or a trowel. This new material has enabled the scene-painter to aid not alone the cinematographer, but also the recordist, for the new paint serves to confine the high frequency sound-waves to the set, while letting the lower frequencies pass, greatly improving the intelligibility characteristics of the record. Laboratory tests have shown that the new paint confines about 40% of the high frequencies. This improves the tone-quality in long-shots especially, and eliminates all of the boom and echo characteristics of the set.

The question of revamping existing sets for further use is in these days of stringent economy, a vital one, and one in which the scene-painter plays a vital part. For a long time, of course, it was regarded as almost criminal to even think of making a set do duty in more than one feature picture. Lately, however, it has been found that the public can seldom recognize a set if it is properly revamped—the geography slightly altered, and the entire set more or less repainted. If the entrance to a set is changed, or a door or window moved, added or removed, the set re-papered and re-decorated, it is almost impossible to recognize it on the screen.

Color pictures are comparatively infrequent of late, but they require unusual artistic sense and diplomacy from the scene-painter. Contrary to the general belief, color pictures are harmed rather than enhanced by too much color in the set itself. For the best results, the sets for a natural-color production should be painted exactly as though they were intended for a normal black-and-white film, for it is the lack of bright colors in the set that makes for the best color-effects on the screen. With the settings in subdued tones, the brighter colors can be carried by the costumes and dressing: in color, as in many other things, it is not so much what you do that is important as is what you do not do. If your entire picture—set, dressing and costumes—is a riot of color, you cannot expect to get artistic, satisfying color-effects on the screen, for each detracts from the impression given by the others, and the combined effect is confusing and hard to look at. In a colored film, even more than in a black-and-white, the set must be above all a background for the action.

The art-director, of course, designs his settings with this in mind. It is his aim to make the sets individually inconspicuous, yet none the less to make them aid in telling the story. But his hands are tied if the man who paints the sets does not understand the ideas the sets are to express. The cinematographer, on the other hand, is equally handicapped if he and the art-director cannot work in complete accord. The scene-painter is often the direct link between the two; he must know what the art-director is trying to express—and how to paint the set so as to express the art-director's ideas, and at the same time give the cinematographer a truly photogenic setting with which to work, painted in the right tones and shades to make possible the effects desired, and with the various shadings, high-lighting and spots of light which will make it easiest to photograph the picture.



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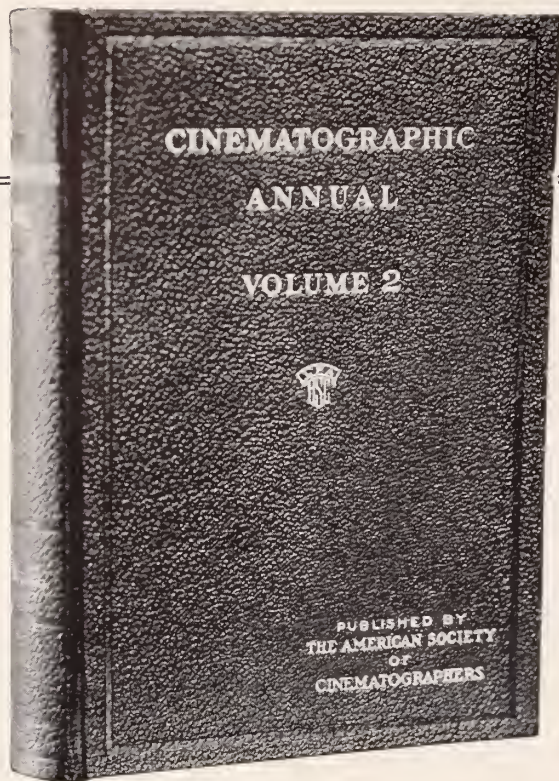


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Hunting "Movie" Gold

Continued from Page 31

back—but it was no time to think of pictures, anyway. I grabbed my rifle, and shot him in the mouth with a steel-nosed bullet. He fell in his tracks; from the empty shell to where he lay was but thirteen short steps. He was a beautiful specimen—a wonderful trophy; I only wish that I could have had a chance to shoot him with a camera as well as with a rifle. I quickly skinned him, and, leaving his hide in a tree, I continued on after my goat-films.

It took me four hours to climb up to where the goats were, but once up there, the hunting was good. They were not particularly camera-shy, and I managed to get a variety of scenes showing their natural habits and surprising climbing ability. Most spectacular of all was one shot I made of one of the goats scaling the side of a steep gorge, the walls of which ran a thousand feet straight up and down. What Mr. Goat was walking on, Heaven only knows! But he did it—and my film will prove it, for I got some excellent shots of the action.

Soon now I will be going farther back, where the beautiful Dalli Ram are. I am sure of close-ups of these creatures, and I'll also stalk a grizzly or two, with camera in one hand and gun in the other. Heretofore, I have always connected with grizzlies without a camera—but now for a picture!

Surely this is one of the greatest pleasures that life can afford—going into the beautiful, wild, mountain ranges in search of moving pictures. What wonderful things a fellow can see up here! To be camped above Timber Line is a joy indeed—clouds majestically float by far below, and the hillsides are dotted with walking snow, which, on closer inspection, proves to be the snow-white Dalli sheep and goats, feeding, feeding—and eternally watching. Creeping upon them unawares demands even greater stealth and woodcraft than does hunting, for while you can kill from a distance, you must be close by to get a good picture. It is harder—but infinitely worth all of the trouble and disappointments, for a photograph—especially a moving picture—will live forever, and enables you to share the thrills of the chase with all of your friends. It is a rough life and a hard one, living and making pictures up here, but I would hesitate to change places with a king—or even with one of those professional cameramen from Hollywood who are in Alaska now making pictures of the life up here at the Top of the World.



Camera Department Maintenance

Continued from Page 7

Moreover, the studio and its executives would have a complete and easily obtained case-record of every item of experimentation undertaken: they could know just what was feasible, and what was not; what developments proved impractical, and what reached the completed stage and saved money in production. There would be, too, a decidedly greater opportunity for practical research and development work—and no industry can prosper unless such experimental work is constantly under way, not alone by the equipment manufacturers, but by the practical users of the equipment.

Finally, let me point out a matter of personnel which is overlooked in all too many studios. Practical experience, both in the Paramount Studio, and in several others which have followed the same practice, has proven that a camera department operates most efficiently when it is headed by a cameraman. I realize that there are several camera department heads who have achieved a considerable degree of success without this practical photographic background; nevertheless, this lack imposes a considerable handicap. In my own case, I know that I would have been definitely hampered had I not been a production cameraman for more than fifteen years before entering the executive duties of

camera-department head. Only by actual photographic experience can one be fitted to handle such diverse questions as that office necessitates. In my own case, I spend a great deal of time in viewing the rushes of every unit, and in personally visiting each set, so that I know just how and under what circumstances each crew is working. Thus, having a background of practical camera experience, I am frequently able to aid my associates. I can judge accurately whether they, the director or the laboratory is responsible in the event that certain takes fall below par. I can more efficiently routine maintenance, and more accurately judge the value of any projected experimental work. What is most important, there is a very definite point of contact between the department head and the cameramen in his department: they know that he speaks the same language that they do, that he understands their problems and aims. Therefore, they have greater confidence in him, as a cameraman, than they would were he merely an executive. Thus, the morale of the department is kept at a higher standard—and in these days, there must be two paramount considerations in studio operation: efficient operation, and the maintenance of the highest possible morale among the personnel of every department.



A. S. C. to Test and Approve

Continued from Page 5

coming so quickly it is felt the time is practically here when standards will have to be set, especially in sound-on-film practice. The amateur is, in many instances, wondering how soon his present equipment will be demoded.

There are said to be about three classes of amateurs. The first, known generally as the "snap-shooter," who is treating his picture camera the same as the ordinary user treats his still camera. He makes no special effort to secure good photography and effects, but is satisfied with getting something of the event he is shooting. The second class is the man who has not gone in for elaborate equipment but possesses what he considers sufficient for him to learn the fundamentals of cinematography, and is traveling slowly until he is sure he is qualified to use the more complicated apparatus. The third is the one with whom Cinematography is a deep seated hobby. He has gone at it in earnest. Eager for knowledge, watching every bit of new equipment offered, trying seriously for his own pleasure to get the best photography possible, the best effects, and in every way endeavoring to turn out a creditable amateur production.

Should equipment be designed for any one of these three classes it will be given consideration from that stand point in the tests and will have to meet the specification laid down at the time of testing for its class only.

Tests will be made as rapidly as possible consistent with thorough and honest work. They will be made in the order in which applications are received in the various types of equipment.

When an article has been approved a certificate of approval will be sent the manufacturer for the model tested together with permission to stamp that article with the approval of the American Society of Cinematographers. The manufacturer will agree to use this approval only in the manner specified by the American Society of Cinematographers.



Fineman to Produce

SHOULD the plans being formulated by Al Fineman and M. A. Chase, exchange men of New York City, a new producing company will be launched with Fineman at the producing helm, while Chase will take over the distributing duties with headquarters in the east. Hollywood will be the site of the producing activities for six features this coming year.

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Alcohol on By-Product "Spree"

Continued from Page 30

The growth in the importance of cellulose acetate film has emphasized the relationship of the film industry to a recent rapid chemical development.

Cellulose acetate film is more than twenty years old, but its adaptation to important uses dates back less than ten years. Within that period, the chemical world has been busy maturing other forms for cellulose acetate. The film maker's subsidiary founded to supply wood alcohol is now making cellulose yarn as well. Transparent wrapping material likewise is taking its place beside film as a utilization of cellulose acetate—and the number of commercial objects that may be moulded from plastic cellulose acetate is unlimited.

Cellulose nitrate—the senior film material—has acquired some cosmopolitan cousins, too, during its long career. Lacquers, artificial leather, and window curtains for automobiles are only a small minority of limbs from that family tree. Perhaps the novelty of cellulose acetate chemistry, and the fact that it makes more products that look less like film, provides the current industrial glamor of this new alchemical realm.

The very fact that film chemistry is looking afield from its constituted line of achievement—and that this article ends with the mention of things apparently far remote from the main theme of film making—points to the magnitude of the film industry, and to the unceasing need for alertness both in the strictly technical and in the economic phases thereof. The crying need of the motion picture industry today is for better and less costly pictures, and it is through such controlled sources of supply and through the exploitation of its non-photographic by-products that the film-manufacturers are doing their part, and giving to the industry a better film, at a lower cost than ever before.

More Silence Please

Continued from Page 17

galow" has its main frame work made of $\frac{1}{8}$ inch fiber board held together by thin aluminum angles bolted by tiny machine screws and nuts. The main section measures approximately $17\frac{1}{2}$ inches in width by 31 inches in length. This section is 13 inches high. The space for the camera magazine is 7 inches wide and 10 inches high and was so designed that the "blimp" can fit only when the camera is in photographing position. This latter section is 26 inches in length and is flush with the back of the blimp. A sheet of optical glass $13\frac{3}{4}$ inches by 9 inches which is held by felt covered aluminum strips serves as a photographing window. This area allows the use of a 35 mm. lens. There is also a window of good quality glass in the rear of the blimp which permits the cameraman to observe all action through the view finder. A door was also cut in the magazine compartment to check the camera take-up during a run.

The entire inside of this booth is covered with two layers of $\frac{1}{2}$ inch felt. A lining of thin black cloth was also used to prevent felt dust from settling on the camera and the photographing window. The first or inner wall of felt comes $\frac{1}{8}$ inch below the bottom of the fiber board while the second felt wall is $\frac{1}{2}$ inch shorter. This construction forms a gravity seal with the bed when the blimp is placed in position. The outer surface of the fiber board is also covered with a layer of $\frac{1}{2}$ inch felt which clears the base of the blimp by $1\frac{1}{2}$ inches. This clearance permits a close fit between the outer wall of the blimp and the inner wall of the tray upon which it rests. Two strips of $\frac{1}{8}$ inch angle aluminum with a metal handle on each end were placed longitudinally on each side of the blimp for strength as well as convenience in placing and removing the cover.

The construction features of this "blimp," needless to say, did not just happen, but are the result of several attempts to keep silence golden in our studio. Several other silencing devices have been attempted, but the present design permits use within four feet of the microphone with very little sound pickup. The greatest problem during construction was that of adhering the felt and rubber to the various surfaces. After several unsuccessful attempts with commercial glues and cements, we found G-E Glyptal Cement to be an ideal solution.



Special-Effects Cinematographer

Continued from Page 13

can be done with the camera, they will still stand out as obvious miniatures. In addition, they are more expensive than the simpler plaster casts.

The relation between the scale of the miniature and the speed of the camera is important—and intricate. It cannot be summed up in any arbitrary rule, but must come as the result of experience and observation, which develop an intangible photographic sense. The scale used for miniatures usually varies between $\frac{1}{8}$ inch to the foot and 4 inches to the foot; camera speeds may range from stop motion up to eight times normal. It would seem relatively simple to calculate the scale and speed of miniatures, but another variable is introduced by the question of the focal length of the lens or lenses to be used. In photographing a certain large miniature recently, we built the set to a scale of $\frac{1}{2}$ inch to the foot; with eighteen cameras used to photograph the scene from different angles, the use of as many different lenses of foci ranging from 32mm. to 6 inches, the camera speeds varied between three times normal and eight times normal. Naturally, too, different types of miniature scenes require different treatment; a ratio of scale, speed and lenses that would suit, for instance, an earthquake, would be utterly wrong if used for a flood. A ratio suited to a simple earthquake would likewise

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be entirely unsuitable for use if the earthquake were followed by explosions. Marine miniatures, naturally, form an entire specialized subject in themselves, as do floods, explosions, and wrecks; in fact, every miniature is an individual problem in itself.

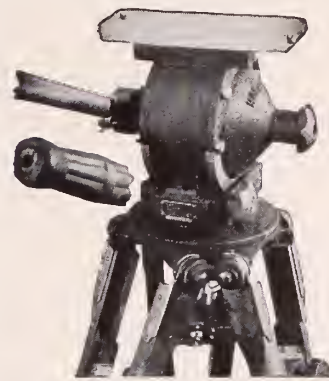
One of the most useful departments in a special-effects studio is the one which is devoted to optical printing. This is really the jack-of-all-trades of special-effects work. All fades and lap-dissolves are now made by optical printing, of course, as are the infinitely varying optical "wipes" now being so frequently used. But, more than this, the optical printer is often drafted to insert special effects not in any other way obtainable, or to salvage both production and trick shots which might otherwise have to be discarded. In a recent Joe E. Brown production, for instance, the script required the star to smoke cigars almost incessantly, and to blow smoke-rings. Now Brown does not smoke at all—and of course he doesn't blow smoke-rings. Therefore, the optical printer was called upon to supply both the smoke and the smoke-rings. In an article in the CINE-MATOGRAPHIC ANNUAL, Volume II, Lloyd Knechtel referred to a miniature train-wreck in which two different takes were combined with full-scale scenes, and in which the wreck was artificially sped up—all by means of the optical printer. In a recent film of our own, the optical printer was called upon to save some expensive retakes when it was found that one of the principal roles had been badly miscast. As it happened, during a long sequence played by practically the full cast of the picture, and upon a large and expensive set, this particular player was seated in a chair. It was, therefore, no surpassingly difficult matter to re-take the scene showing only the new player, seated in the chair, and then to combine the two takes into a single scene by means of the optical printer—thereby saving some expensive retakes. Similarly, one of my friends in another studio used an optical printer to repair a split-screen sequence in a picture in which the star played a dual role. In making the second half of this sequence, the camera was racked over too far after focusing, so that there was a considerable gap between the two halves of the take. Thanks to the optical printer, this was moved over to where it belonged, and blended with the other half of the picture, saving the company a large sum, and some intricate retakes.

A successful special-effects department should whenever possible maintain its own laboratory. Despite the perfection of the modern production laboratory, it is not fitted to handle the work of a special-effects department, which uses many different types of film—Panchromatic, Super-Sensitive, Orthochromatic, Positive, Master-Positive, and Duplicating Stock—and in which each individual scene requires individual treatment in the laboratory. Therefore, the only solution is for the special-effects department to maintain its own laboratory; a miniature plant, as perfectly equipped and staffed as the best production laboratory, but, naturally, with a far smaller capacity, and closer control of all operations.

As an inevitable consequence of all this, there is a highly important question of equipment maintenance to be remembered. The abnormally high operating speeds of special-effects cameras, and the fact that for special-effects work the camera must be constantly maintained in perfect operating condition, make this problem of maintenance a grave one. Special-effects cameras must, also, be considered as the highest type of precision machinery, for in many instances, cameras which have proven themselves perfectly satisfactory for production work have been rejected for use in special-effects work because of insufficient accuracy in their mechanical functioning.

The special-effects cinematographer must, therefore, be like Kipling's marine—"a sort of a blooming cosmopolouse." He must be a technician of a high order, an artist, and fully informed regarding the work and the personnel of

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every other department in the studio. Most of all, he must be enough of an executive to successfully coordinate the work of his department with the schedules of perhaps a dozen production units—and enough of a diplomat to work efficiently and amicably with the dozen different directors, writers, cinematographers and supervisors connected with those units. As a rule, he is all of these things; he wouldn't survive if he were not—and, like the marine, "you could put 'im ashore on a bald man's 'ead to paddle 'is own canoe."

Academy Appoints Technical Committee

In its preparations to select the winners in the various classifications set down by the Academy of Motion Picture Arts and Sciences in its annual awards of merit, Chairman Nugent H. Slaughter of the Technicians Branch has appointed his board of judges to review the technical and scientific achievements within the film industry.

Those appointed on this committee by Slaughter include: John Arnold, A.S.C., J. A. Ball, Carl Dreher, Emery Huse, A.S.C., K. F. Morgan, Maurice Pivar, Max E. Parker and J. M. Nickolaus. Chairman Slaughter is an ex-officio member of the board.

Paramount to Issue Newsreel in France

According to reports emanating from Paris a special organization to produce a French newsreel is said to have been completed by Paramount at its Joinville studios.

The plans are understood to include the sharing of this service on the continent jointly with London which until now has been headquarters of the whole of Europe. E. B. Dascond is mentioned as editor of this animated news project.

Expert Interprets Electrical Tax

Electrical energy used by motion picture theaters in the projection of pictures, lighting of signs and display boards, and in the lighting of the building, etc., is subject to the 3% electric tax, under a ruling just issued by the Tax Department, according to J. S. Seidman, tax expert of Seidman & Seidman, certified public accountants.

"The law," Mr. Seidman explained, "provides for a 3% tax on the amount paid for electrical energy used for domestic or commercial consumption. Electricity used for industrial consumption is not subject to tax. The question arose whether electricity employed in the operation of the motion picture theater business is commercial in its scope or industrial. The decision of the Tax Department is that it is commercial and therefore subject to tax.

"Another ruling that will be of interest to the motion picture industry," Mr. Seidman added, "has to do with

the tax on radios and phonograph records. It is held that photophone sound systems for recording and reproducing sound in connection with motion pictures are not taxable as such. However, if electrical transcription records or phonograph records are used in such sound systems, they are subject to tax."

Riddle Me This

Continued from Page 16

ARTHUR EDESON, A. S. C. I've made pictures both ways, but I much prefer to make my interiors on location—if I've got a picture that permits it. Of course, it can't be denied that it's harder work that way—but the results justify it. On the other hand, you have more complete control of your lighting if you make your interiors on the stage—but we can't yet control our lighting so that we can make artificial light look like daylight. So—especially if I have a well-designed set and a capable director—I prefer to make my exteriors and interiors together—out of doors.

JOHN F. SEITZ, A. S. C. To my mind, the question depends entirely upon the nature of the picture in hand. On some, the slightly artificial effect of studio-made exteriors might be entirely fitting; but in most cases, I really prefer to have the important interior sets for a picture built out doors, as practical parts of the major exterior settings. We did it in "A Passport to Hell," which I recently photographed, and the results, I think, are decidedly better than could have been obtained had we tried to make the exteriors on the studio stages.

RAY JUNE, A. S. C. I have worked both ways, according to the needs of the particular production in hand. As a rule, I prefer to make my exteriors on the stage rather than vice-versa, for I feel that this method has both artistic and commercial advantages. In the first place, of course, working indoors the cinematographer has a far more perfect control of his lighting and other effects. Secondly, working in this way, the company is completely independent of natural lighting and weather conditions—an important consideration at any time, but especially so at this season. Then, too, with the perfection of the transparency-projection process which is now used so frequently, it is possible to eliminate many arduous and expensive location trips. Lastly, working under the familiar and perfectly-controllable conditions of the studio stage, the entire unit works more efficiently. It goes without saying, of course, that the company which is able to turn out the most scenes per day, while maintaining the artistic and technical standards required, is the most efficient in these days of high negative-costs and low profits.

As a proof of my feelings on this subject, I might add that we are planning to handle the production of Mary Pickford's forthcoming production, "Shantytown," in this manner. Working constantly on the stage, I am confident we will secure better results, and secure them faster and with less expense than could be possible in any other way.

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Yates Champions Commercial Lab

IN an announcement issued by the Consolidated Film Industries Inc., Herbert J. Yates, president of that corporation, claims the independent laboratory more efficient than the studio operated plant.

"Producers who have refused to be influenced by their own or other's prejudice," stated Yates, "and have studied the actual facts have found that a definite loss is incurred in operating their own film laboratories. Due to the nature of the film laboratory this is inevitable."

It is Yates' contention that one of the strongest needs of the motion picture industry at the present time is specialization because specialization makes for economy which is much needed at this time. "These are days," said Yates, "when the curtailing of all unnecessary expense may mean the early return of operating the industry on a profitable basis. The attempt on the part of some producers to produce, distribute, exhibit and print their own pictures has cost them millions."

A higher quality of prints, the relief of thousands of burdensome responsibilities, and a more prompt service are some of the points which Mr. Yates cites in behalf of the independent laboratory. He argues it is a wasteful extravagance for a producer to maintain a film laboratory with a capacity that at all times accommodates a peak volume of quality printing, either quality or performance suffer or the cost is prohibitive.

"A well equipped commercial plant," claims Yates, "whose business from various sources flows in steadily enables them to employ a full complement of help throughout the year. Delays and poor quality are the penalties paid by organizations where employment is not continuous.

"To the producer, making pictures is the all important thing. To the film laboratory, making prints. As a consequence, the film laboratory is ceaselessly seeking the means by which to advance the science of printing.

"Only specialization," concludes Yates, "with the steady flow of business that it brings in from multitude of sources, together with a determination to produce the best at the lowest possible cost, can achieve the most efficient and economical results."

Hoover to Campaign Via 16 MM

ACCORDING to reports emanating from the east, it is claimed the Herbert Hoover for President picture which has been produced as a part of the Republican campaign will also be available in 16mm on sound.

Whether the Democratic party will follow the lead of the Hooverites to reach this vast audience of 16mm users has not been determined. The Republican party seems to realize the importance of this field, and the undivided attention their message will receive in this form right in the home of the viewers where they have possibly assembled many friends for an evening of entertainment.

R-K-O Trick Departments Consolidated

WITHIN the past few weeks the trick and special photographic departments of the R-K-O Studio have been unified, under the management of Vernon Walker, A. S. C. Lloyd Knechtel will remain in charge of special optical-printing effects, glass-shots and miniatures, while Lynn Dunn will continue to handle the making of routine optical-

printer effects, such as fades, lap-dissolves, "wipes," and dupes. Mr. Walker, in addition to being the department head, will have personal charge of all process cinematography, including transparency and projection shots.

This move, according to R-K-O officials, has been made in the interests of economical operation and efficient production. Heretofore, with several departments handling the different phases of the work, the responsibility was divided. The present consolidation of the studio's special-effects departments is planned to remedy this, and to give to each of the technicians involved better opportunities for concentration upon the highly specialized work in which they are engaged.

Jansen Offers Complete Studio

W. H. Jansen, A.S.C., managing director of Industrial and Educational Films, Inc., of Shanghai, China, in a recent report to the Production Committee of the American Society of Cinematographers, states that his firm is now equipped to offer to American producers and cinematographers complete studio and laboratory facilities comparable to those obtainable in Hollywood. Aside from complete camera and recording equipment, these facilities include a 70x120 ft. sound-stage, a sound-equipped projection-room, and a modern laboratory for processing both black-and-white and Multicolor film, using machine-development and fully air-conditioned. The plant is staffed entirely by American and European technicians.

Mr. Jansen states that for the past ten years all cameramen passing through Shanghai have made his establishment their home while operating in China, and that the facilities of the studio are at the disposal of any producers sending either crews or complete units to the Orient.

Vatican to Study Movie Making

The presses of France and Germany report that the Pope has appointed a delegation to visit Hollywood with a view of studying the methods and manners of making pictures in vogue in America.

It is reported this committee will make a thorough study of the technical phases in operation in the United States. Seemingly it is the intention of the Vatican to produce pictures showing the early history of the Catholic Church and also other subjects depicting the lives of its great leaders and saints.

Raw Film Production in Russia

A press report from Soviet Russia states that the raw film factory "Schostenskaya" has turned out 2,000,000 meters of raw film and the "Perejaslawskaya" more than 1,000,000 meters of raw film. Under the five-year plan these two factories are expected to supply the entire raw film requirements of Soviet-Russia.



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Thru Lens of Critic

Continued from Page 18

does the best that he can under the circumstances, and in the few scenes where the camera is not roving all over the studio, shows excellent form; but in the major part of the film he is overwhelmed by the director's penchant for traveling by dolly.

There is, however, a sequence in a Harlem negro nightclub which is so fine as to almost redeem the picture. The various optical transitions, executed by Lloyd Knechtel, are also excellent. But in the main, the picture is Roy Hunt's valiant struggle against the imponderable odds imposed by a director who should have known better.

"THE MONKEY'S PAW."

photographed by **Leo Tover**.

THIS is yet another example of artistic effect-photography in a mystery-horror film. A time-honored British story, played by a British cast, this film might, except for Tover's cinematography, have been made in deah old Lunnnon. But I have yet to see the British film that is so excellently and tastefully photographed as is this American-made "quota film."

"MADISON SQUARE GARDEN."

photographed by **Henry Sharp, A. S. C.**

HERE is a very similar picture which, thanks to a director who appreciates the meaning of photographic good taste, is a really fine piece of photography. The story and its locale allowed Henry Sharp no opportunity for anything but good, straightforward commercial photography; but he was able to deliver it without hindrance. His lightings and compositions, while necessarily not pictorial, are natural and effective. The major honors of the production, however, must be awarded to Farciot Edouart, who has contributed some magnificent process photography. Approximately 65% of "Madison Square Garden" is process work, but so perfectly done as to defy detection, even by experts.

"ALL AMERICAN."

photographed by **George Robinson**.

HERE is still another sports picture, one in which the photography, as always in such films, must inevitably take second place, but one in which the camerawork is extremely well-done, none the less. I would commend this especially to amateur cinematographers who are planning to film football games this season. The viewpoints chosen for many of the football shots are similar to those of the man in the stadium; with a little study, the 16mm. football fan can easily glean a number of excellent pointers on how to film football, quite aside from the routine hints of "use 32-speed and a telephoto lens."

AN APOLOGY.

LAST month, in discussing "Love Me Tonight," we stated that the picture seemed to have been photographed in far too low a key for the light nature of the story. Since then, we have seen the picture again—a different print. We must transfer our criticism to Arch Reeve, who showed the press a print which was not up to the Paramount standard, and to Roy Wilkerson, of the Paramount Laboratory, who for almost the first time in history, turned out a poor print. Our apologies to Messrs. Milner and Mamouliau.

I Meet the Cameraman

Continued from Page 9

This is most unjust—especially so because our cinematographers so seldom fail, no matter how impossible the odds against them.

No words can possibly tell how greatly we who work in front of the cameras are dependent upon the cinematographers. It is not merely that they have it in their power to make us appear beautiful or otherwise on the screen. All of us, of course, naturally want to appear at least reasonably near our best; but that is the least of it. First of all, we are actors—and we must be mentally free if we are to do our best work. If we must be eternally thinking of our appearance, we cannot play our parts as we should. We cannot be everlastingly thinking, "Now, I musn't do this—it won't screen well . . . I musn't do that—it photographs badly . . . I musn't turn that angle to the camera—it's bad." That, I think, is the secret of the success of such superlative artists as "Ollie" Marsh; instead of issuing a long string of "Thou shalt nots" to his stars, he smiles, and tells them to go ahead and do anything that the part requires—and let him take care of their appearance. As a result, the star forgets everything except playing the part for all it's worth. Once you have such a sense of psychological freedom, you're twice the actor that you'd be otherwise. At least, I found it so in the picture that I have just finished with Mr. Marsh; he told me to forget everything that I had supposed I shouldn't do. Therefore I did—I played the part as freely as though I were on the stage. I forgot that such a thing as a camera existed. I raced all over the set—screamed—laughed—was hysterical and angry as the part required. In short, I forgot completely that I was being photographed. The result is a marvelous tribute to "Ollie's" genius both as a cameraman and as a psychologist; I really looked human in the picture—and I was able to get my teeth in the part, as the saying is, and turn in a performance that didn't in the least resemble the camera-shy Tallulah Bankhead of the past. But—hidden down deep behind "Ollie's" mastery of psychology was a tremendous skill at photography, and ingenuity that saw and used angles that everyone else had thought impossible. I am not an easy person to photograph; I have a few good features and angles jumbled up among a number that were certainly not planned for photography; but throughout the picture, Ollie Marsh made me appear as perfect as though every feature had been expressly designed for the camera. In addition, his lighting and general photographic treatment matched the mood of every scene perfectly, despite the many concessions that I know he must have made to making me beautiful.

Many of my friends on the stage—people who have never had any experience in the films—have said that the cinema is not art, but a mere mechanical craft. That may be so; but in the cinematographers there is undying evidence to the contrary. In my brief career in the films I have learned that there is more—far, far more—to cinematography than the mere mechanical operations of setting up lights and grinding a camera. From my own personal experience I can testify that the achievements of the cinematographers are art in the highest and best sense of the word. More than this, I have come in contact with an entirely new standard of devotion, of cooperation and of patience. What words are there to express the admiration that I have for these unassuming men who achieve so much; who are constantly, patiently working when all of the rest of us are resting between scenes; and who exemplify such a fine standard of loyalty and friendship as do the cameramen? Yes, I am proud to know them, to have worked with them, and to add my small meed of praise to the tribute they so richly deserve—and so infrequently receive.



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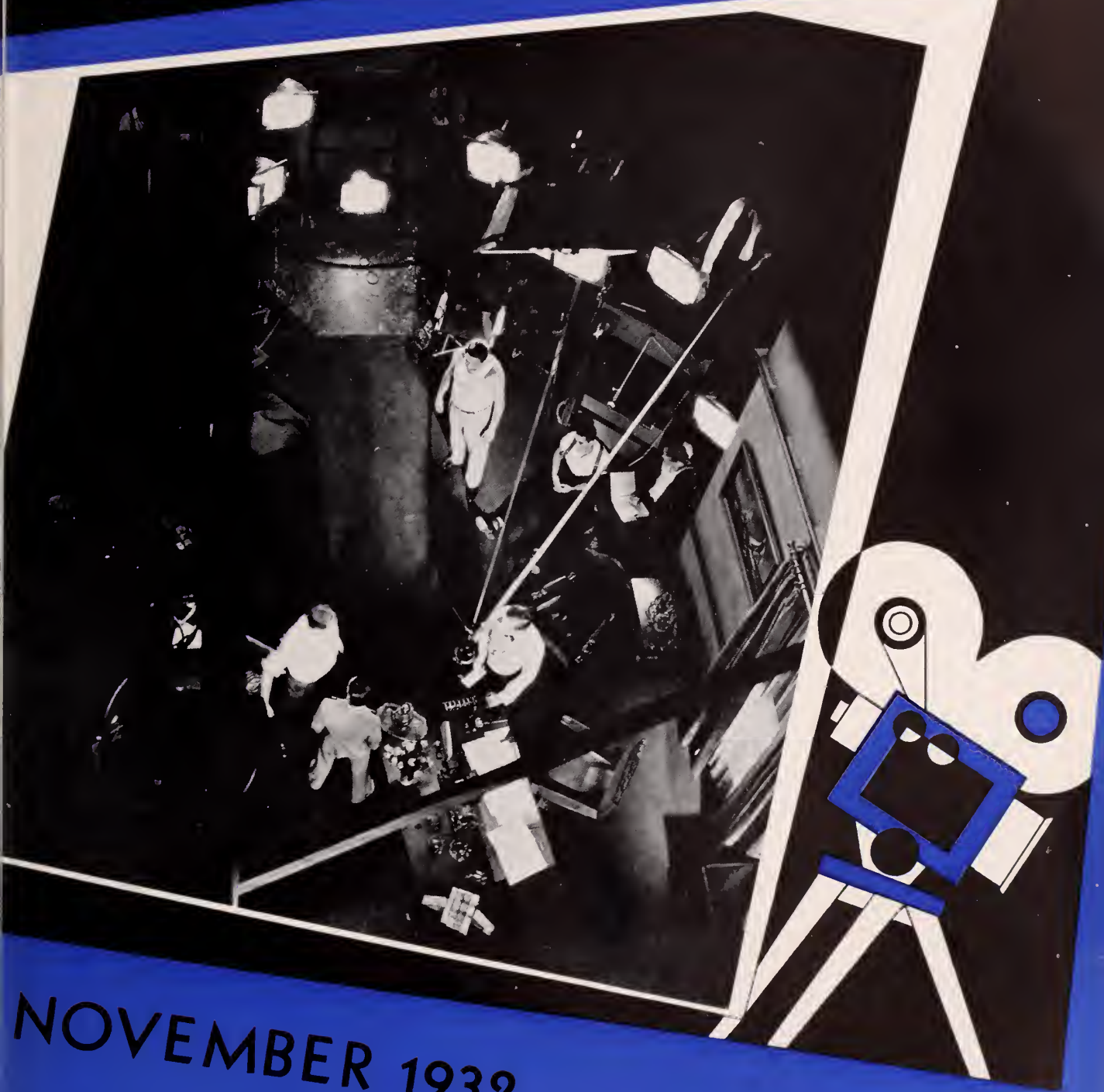
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NOVEMBER 1932

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A Swedish Explorer Discovers Hollywood

and an EYEMO

CLINGING to a narrow Faroe Island rock-shelf in a tempestuous gale struggling with a large studio camera, the light coming and going "with maddening irregularity," Captain Sten de Nordenskiöld of Sweden's Royal Geographic Society, found himself wishing devoutly for a "light camera, portable, mechanically driven—a camera that one could light and operate with the quickness and accuracy of a rifle."

Arrived in Hollywood, the Captain found the camera he had been looking for — the Bell & Howell Eyemo 35 mm. hand camera. And through its quick eye, the Captain caught so much of all that is spontaneous and natural and admirable in Hollywood, that his Eyemo-made film, "Hollywood



Captain Sten de Nordenskiöld with his Bell & Howell Eyemo

City of Celluloid," is now on its way to the cinema theatres of the world.

In Captain Nordenskiöld's story of his Eyemo lies the whole story of Eyemo's quickness and mobility.

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THE AMERICAN SOCIETY OF CINEMATOPHAGERS was founded in 1918 for the purpose of bringing into closer confederation and cooperation all those leaders in the cinematographic art and science whose aim is and ever will be to strive for pre-eminence in artistic perfection and technical mastery of this art and science. Its purpose is to further the artistic and scientific advancement of the cinema and its allied crafts through unceasing research and experimentation as well as through bringing the artists and the scientists of cinematography into more intimate fellowship. To this end, its membership is composed of the outstanding cinematographers of the world, with Associate and Honorary memberships bestowed upon those who, though not active cinematographers, are engaged none the less in kindred pursuits, and who have, by their achievements, contributed outstandingly to the progress of cinematography as an Art or as a Science. To further these lofty aims, and to fittingly chronicle the progress of cinematography, the Society's publication, *The American Cinematographer*, is dedicated.

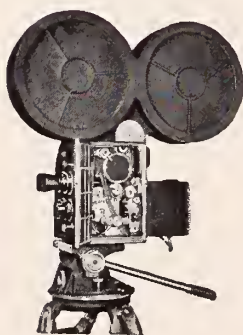
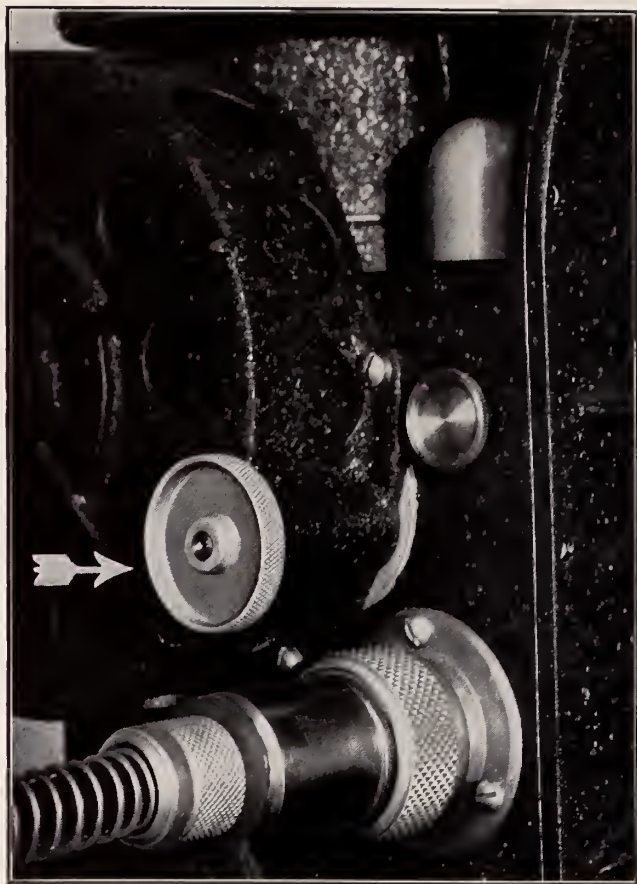
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Industry Endorses A. S. C. Proposed Testing Plan

ENTHUSIASTIC encouragement of the plan proposed by the American Society of Cinematographers for testing photographic equipment, methods and materials, both professional and amateur, poured into the Society after the announced intention of that organization to enter upon this work.

Manufacturers and their representatives acknowledged the constructiveness of this idea by letter, wire and personal interview.

Indicating a keen interest in this move, E. P. Curtis of the Eastman Kodak Company wired: "Eastman Kodak Company much interested your plan stop believe that proper handling it could be of real service to industry."

Realizing the benefit this testing will mean to the buyers, J. H. McNabb, president of the Bell & Howell Company, stated: "In its plan for testing both professional and amateur cine equipment, materials and methods, the A.S.C. is undertaking a very sizable task, and one which can be made for decided benefit to buyers of such products and services.

"The Bell & Howell Company will welcome your testing any or all of its products, professional and amateur, present and future."

Concurring with the plan, Smith & Aller, representatives of the Dupont Film Mfg. Corp., remarked: "As representatives of the Dupont Film Manufacturing Corporation, we are keenly interested in the plan of the American Society of Cinematographers for testing as outlined in the American Cinematographer of last month. Both we and the Dupont Film Manufacturing Corporation will co-operate in every way possible."

Believing there will be a great value in an unbiased judgment such as the Society is in a position to give on technical matters, W. H. Carson, vice president of the Agfa Ansco Corporation, remarked in part:

"As manufacturers of various kinds of photographic equipment we are much interested in the article as it appears in the October issue of the American Cinematographer, announcing the intention of the American Society of Cinematographers to set up a testing service which will enable them to make exhaustive tests on all types of equipment and materials used in the industry.

"There is no doubt whatever of the value of an unbiased judgment of various products that may be offered for use, particularly when in this day of exaggerated advertising, claims are made by new and unknown manufacturers for their own products.

THE TEST TUBE

WHAT A PIECE of equipment an article or a method will do in its practical use is the acid test of the worth of that article.

APPARATUS designed for motion picture making are the tools of the technician.

THE PERFORMANCE for him must in all instances be the final test.

VALUE is in the practical service it will give.

"If anything is to be accomplished in establishing a testing bureau of this kind, a step must be made some time."

Expressing his confidence in the American Society of Cinematographers to conduct these tests, A. Traeger, president E. Leitz Inc., manufacturers of the Leica Camera, had this to say: "It gratifies me to learn that your splendid organization has taken a special position to clarify the deluge of information now available for the various makes of photographic equipment. Naturally the amateur as well as the professional photographer are keen to learn about all the very latest improvements in their particular fields. Consequently, the only practical way to sift through so much information is to have an unbiased organization such as the American Society of Cinematographers conduct rigid tests of all photographic equipment.

"I will welcome an opportunity to cooperate with your organization and the engineers associated with your technical division in bringing about this new service for the thousands of people who appreciate the value of authoritative information behind every product they purchase."

While Willard D. Morgan, manager of the Photo-Optical department of the E. Leitz Inc., supplements Mr. Traeger's remarks thusly: "Undoubtedly your organization will be in a position to produce excellent technical service for the many amateur and professional photographers throughout the country. I will be very pleased to see that your technical department has an opportunity to report on the merits of the Leica Camera whenever you are ready. Naturally if it is possible for us to pass the requirements established by your technical department, we will be very pleased to use your approval mark in our advertisements or possibly in our publications."

Believing the testing to be done by the American Society will give the users of equipment greater confidence in that equipment, R. E. Farnham, engineer of the General Electric Company remarked: "The program as outlined in the October issue of the American Cinematographer is certainly a most ambitious one and should give the cameraman greater con-

Continued on Page 37



Harry
Lachman

THE MOTION PICTURE industry in Europe is not only a healthy infant, but a growing one. Talking pictures, restricted import-quotas, and a number of other factors have combined to produce this result: accordingly, in France, England, and the other major producing centers of the continent, both bona fide domestic production and "quota production" by branches of the leading American concerns are distinctly on the increase. In many countries there exists a serious shortage of product, even to the extent of forcing many of the major first-run theatres to play revivals of popular silent and talking pictures. Only today, for instance, I received a newspaper clipping telling of the revival of one of my own pictures, "Under the Greenwood Tree"—one of the first talking films produced in England—at one of London's major cinemas. Under such conditions, and with the importation of American productions confronted by increasing restrictions, it is inevitable that European production must continue to grow.

Production in the major studios abroad does not differ greatly from its counterpart in Hollywood. The same factors enter into the problem on both sides of the Atlantic: pictures must be saleable; they must be turned out on schedule, and within a definite budget; and they must be primarily motion pictures rather than photographed novels or plays. But here the resemblance ceases: there are definite factors in the European centers and in Hollywood which create distinctive conditions.

In Europe, for instance, while the actual production schedules are about the same as those allowed here, the budgets are considerably lower. The average budget for a better-than-average picture is in the neighborhood of \$100,000. A budget of \$200,000 is most unusual, and such a film is inevitably a "special." Program features may cost as little as \$50,000—or less. Yet it does not by any means follow that the quality of the product must suffer from these financial limitations: it simply indicates that in many respects, costs are lower there than is the case here in America. Material costs are, as a rule, rather less, and salaries are far smaller than is general here. The prices paid for story material are more reasonable. Most important of all, studio overhead is vastly lower: there are

Technical Ingenuity

practically no contract players, and few contract stars in Europe. Artists are engaged by the picture, and only for specific parts. Practically the only people under regular, long-term contracts in the European studios are the cinematographers: this is because there is a great scarcity of capable cameramen throughout Europe. The free-lance cameraman is a rare bird, indeed—and one who (if he is capable) is very likely to be snapped up by some studio and put under contract, willy-nilly. Many of the outstanding cameramen in Europe today are either Americans or Europeans who have had experience in the American studios. Among these men are Harry Stradling, Phil Tannura, Ted Pahle, Georges Benoit, A.S.C., and Henry Gerard, who has just returned from some time spent in the British studios. On the other hand, there are, too, a number of fine artists whose background is exclusively European, and whose achievements have gained them equal recognition: among them are such men as Rudolph Mate, Claude Friese-Greene (whose father is recognized as one of the inventors of the cinema), Gunther Rittau, Gunther Krampf, and others too numerous to mention here. In the future, I predict, the number of American cinematographers working in Europe will be considerably augmented, for the opportunities are great, and the need for such men very pressing.

In so far as the cinematographer is concerned, studio conditions in Europe are quite similar to those here in Hollywood. True, the studios are smaller, and less completely equipped: but in the major studios, the equipment, limited though it is, is good. Paramount's new plant at Joinville, near Paris, is exceptionally complete; and some of the British studios are also relatively well-equipped. In no case, however, is there the profusion of either equipment or trained technical personnel that there is here in Hollywood. In England and France, Bell & Howell and Mitchell cameras are the rule, with either Western Electric or RCA recording. The French DeBrie silent camera—an excellent machine—is also extremely popular, especially with the native European cameramen. In Germany, DeBrie and Askania cameras are more common, and recording is exclusively by Tobis-Klangfilm apparatus, which is not, to my mind, comparable in any way with the American recorders. Arc lighting is used far more extensively than is the case here in America; in Germany, incandescent lighting is practically unknown, while in England and France both types are available. In some of the studios in the latter countries, American units (principally Mole-Richardson and Kliegl) are used as well as locally-produced ones.

Due to the smaller sums available for production, settings are not always as extensive as is possible in this country. This is not by any means entirely disadvantageous, however, for it forces us to prepare our scripts more carefully, and makes the art-directors, directors and cinematographers exercise their ingenuity to a decidedly greater extent than would be likely if we were able to build exactly what we wanted every time. It is significant that one of the three nominees for the Academy award for Art

Reduces European Production Costs

by

Harry Lachman

Direction this year is Lazare Meerson, from the Tobis Studio in France.

Due to the proverbially uncertain climate—especially in England—location work is practically impossible. In a country where the sun may not shine for weeks at a time, one can't, obviously, plan a shooting-schedule of, say, three weeks, and have any assurance at all that the sun will put in an appearance during that time. In the past year or so, however, this disadvantage has been more or less offset by the introduction of process photography as it is known and practiced here in Hollywood. Both the ordinary transparency and the projection-transparency processes are used with a high degree of success in the British and French studios. In Germany, on the other hand, where one would naturally expect to find skilled process-technicians, such work is practically unknown. The Germans partially make up for this by their skill in the design and construction of sets.

The weakest link in Europe's production-chain is the laboratories. These, as a rule, are unbelievably bad. However, Paramount's laboratory at the Joinville studio is an exception. It is very good, and there are one or two rather decent ones in England: but on the whole, the laboratories in Europe do not compare with even the lesser ones here in Hollywood. None of the European laboratories seem able to get anywhere near the tonal quality and gradation that is common here, while in low-key lightings, the blacks are not nearly so rich. And yet, the same film is used, and by equally expert cinematographers.

The art of makeup is not nearly so well understood in Europe as it is in Hollywood. The Makeup Artists Association might do well to send some missionaries to the foreign studios! Part of the blame, however, must rest with the producers, directors and stars themselves, for they do not as a rule pay so much attention to having the players (especially the women) look their best. In some cases, I suppose, this is due to the ill-conceived notion that paying proper attention to these details denotes a lack of artistic virility; in other cases, it is just plain carelessness. At any rate, note the difference that careful American makeup, hair-dressing and costuming make in any European actress who appears in American pictures. Personally, I do not feel that the Hollywood attitude is any sign of artistic weakness: quite the contrary, it is a sign of artistic thoroughness—and commercial foresight, for, after all, the public that supports us by paying its quarters and shillings and francs at the box-office does so in a great measure because it enjoys seeing its beautiful favorites—its Joan Bennetts, its Janet Gaynors, its Lilian Harveys—at their



**Harry Lachman and Rudolph Mate
Shooting a Picture in Europe**

best. Indirectly, the European producers must appreciate this—for if a cameraman shows that he can photograph women well, he need never be out of work.

In the less tangible conditions confronting a cameraman in Europe, his position is in some ways different from that of an American cinematographer. There, the cameraman is not only a highly important person on the set, but also away from it. His name is better known to the public. There is a picture now running in Europe—Carl Dreyer's "The Vampire"—which is recognized as a success solely by virtue of the public's appreciation of Rudolph Mate's superb photography. Moreover—the press acclaimed the picture solely as a photographic masterpiece, and the public welcomed it on that basis!

The European cinematographers, however, do not have the advantage that their American confreres have in the American Society of Cinematographers. It has been my privilege to have worked with several American Cinematographers in Europe in the past—among them such artists as John Seitz, A.S.C., and Lee Garmes. From them I have learned a good deal about the Society and its achievements, and of its value in every phase of the American industry. Therefore I have been very glad to learn that a similar organization is being established in France, the Societe des Cinegraphistes Francaises, by men who, like Georges Benoit, A.S.C., and others, have known at first hand the value of such an organization.

EDITOR'S NOTE. (The author of this article, Harry Lachman, has recently joined the staff of the Fox Studio. Mr. Lachman is an American who has achieved distinction abroad as a painter, photographer and motion picture director. He is one of the few contemporary painters with more than a single painting in the Luxembourg Museum in Paris, where four of his works are on permanent exhibition. He has also been decorated with the Legion of Honor by the French Government for his artistic achievements. In motion pictures, he has directed for the French and British divisions of Paramount, Metro-Goldwyn-Mayer's British Studio, British International Pictures, and others, where he has gained an enviable reputation for his understanding of the aims and problems of the cinematographer. Among his more recent films, which combine high standards of both dramatic and pictorial artistry, are "Under the Greenwood Tree," "Aren't We All," "Mistigri," "The Outsider," "La Belle Marinier," "La Couturiere de Lunville," and "Down Our Street." The latter production was recently previewed to the Hollywood trade press, and acclaimed as one of the most noteworthy productions to come out of England. It is reviewed in this issue.)

New Method Revives Interest in Disc Recording

THE EARLIEST TALKING pictures made use of wax discs similar to commercial phonograph records for the recording of sound. Edison's first experiments with the Kinetoscope—the ancestor of all moving picture apparatus—in 1895, made use of his then recently developed phonograph for the production of living, talking pictures. At several times during the decades that followed both Edison and others made attempts to popularize talking pictures, synchronizing disc records with motion picture film, but with little success due to difficulties in synchronization, recording and amplification.

When, in 1926, the Vitaphone made its first appearance, ushering in the talking picture as it is known today, disc recording was used for the sound component. Since then, however, rapid advances in equipment and technique for recording sound on film, together with a number of notable commercial advantages of sound-on-film recording, have made film recording supreme in the motion picture field. Recent improvements in disc recording—notably a revival of the vertical-cut record and the introduction of a new, unbreakable and practically non-inflammable cellulose acetate record-material—bid fair to rescue the disc process from the state of desuetude into which it has fallen. We quote herewith technical descriptions of the new process from communications from the engineers of Electrical Research Products, Inc., who have developed it.

"There are numerous methods by which sound energy may be stored or recorded in order that at some subsequent time a recreation of the original sound may be heard. Of these methods the two best known are the so-called sound on film or optical method and the sound on disc or mechanical method. There are two well known types of optical recording, namely, variable density and variable area. There are also two types of mechanical recording, namely, lateral cut and vertical cut. Of these two mechanical methods, the lateral cut is by far the best known and has been the most widely used to date. The vertical method has, however, been used to some extent as, for example, the early Edison or hill and dale record. The last few years of development, however, have led the engineers of the Bell Telephone Laboratories to the conclusion that this method of vertical recording, heretofore discarded as unsatisfactory, had in reality certain fundamental advantages particularly insofar as fidelity of reproduction is concerned. Preliminary tests gave promise and after careful experimental and analytical studies there now is available the new vertical cut recording method which has a fidelity

of reproduction probably accomplished by no other method of recording at this time. In addition it has been found possible to suppress the ground noise which results in a greater dynamic or volume range of the reproduced sound. Retaining this fundamental idea of vertical cutting the engineers have produced a unit which is being introduced in Hollywood by the Electrical Research Products, Inc.

"With the lateral type of cut a certain amount of space must be allowed between adjacent grooves for the displacement of cut since the cutting motion of the stylus is sidewise to the groove. With the vertical method, on the other hand, this under groove space may disappear completely without harmful effect. With the vertical system, the number of grooves that can be put on a record of given size is very much greater than with the lateral cut method. The reproducing needle with the lateral cut is guided by the sides of the groove so that over cutting would permit the needle to slip into an adjacent groove and ruin the reproduction. With vertical records, however, the reproducing stylus is guided by the bottom of the groove only so that over cutting is permissible to a considerable degree without harm.

"The use of abrasive in the pressing of the finished lateral cut record has been more or less necessary in order to grind the reproducing needle to fit the groove. With the vertical recording method the necessity for the use of abrasive in the final record has been eliminated inasmuch as a reproducing stylus is employed which has been ground to a definite predetermined shape. For this reason the reproducing stylus need never be changed since it has been found desirable to make the pressings of vertical records of cellulose acetate containing no abrasive. Studies have indicated that with the available reproducers for lateral cut records the needle point may fail to follow the center of the groove accurately particularly when the curvatures become great. This tendency is further increased due to the fact that with lateral cut records the sound is recorded with a chisel-shaped stylus and reproduced with a round stylus. The bearing point of the stylus against the groove shifts backwards and forwards as the needle rounds the curve. These effects are illustrated in Figure 1. This failure of the lateral type reproducer to follow the center of the groove naturally results in a considerable amount of distortion in the reproduction.

"In connection with surface noise tests, frequency analyses have been made with a variety of reproducers and record materials. In general these frequency characteristics have been found to be largely influenced by the char-

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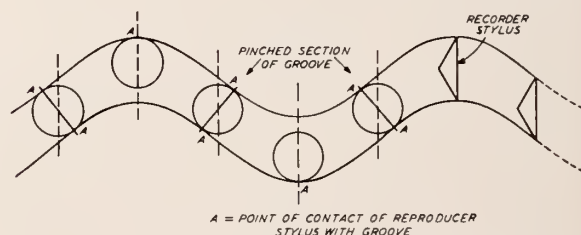


FIG 1 DISTORTION IN A LATERAL GROOVE

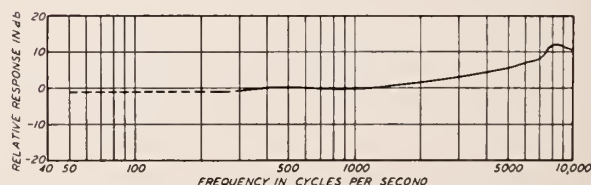


FIG 2 ENERGY DISTRIBUTION OF SURFACE NOISE FROM A CELLULOSE ACETATE RECORD.

Keeping Cameras Running

by

W. Johnson, M. E.

A MOTION PICTURE camera represents a very considerable investment, which is profitable only so long as the camera is running. It is vital to keep the camera not merely in operating order, but in perfect condition at all times.

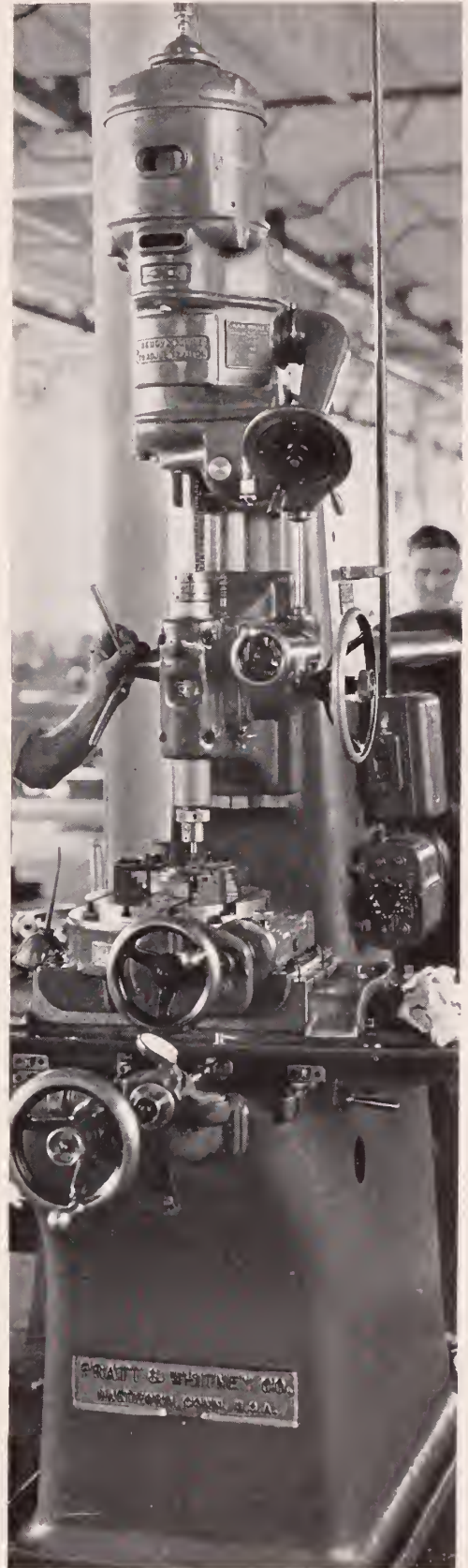
To attain this end, several steps are necessary. In the first place, cameras must be properly and carefully cared for and serviced while in service, and, when repairs are necessary, such repairs and replacements must be made by the most experienced of personnel. Any laxity in either of these phases is poor economy indeed, for it jeopardizes not merely the individual equipment, but also the production upon which that equipment may be used.

The servicing of studio cameras is simple, but exacting. Film-channels, aperture, magazines and so on must of course be kept clean, free from both dust and the microscopic accumulations of emulsion and celluloid which sometimes collect under the best of conditions. Lubrication must be frequent and adequate, without being excessive. Most important of all, movement, lens-mountings and the like should be frequently inspected by skilled engineers, for often a minor adjustment, made at the right time, will obviate a major repair. Since the advent of sound, this phase takes on added importance, for, while a modern, well-built studio camera is sufficiently far from being a delicate instrument, and, despite its precision, will operate acceptably under a surprising amount of abuse, it requires proper lubrication and adjustment if it is to be kept sufficiently silent to operate successfully with modern recording equipment. As they leave the factory, such cameras are quite satisfactorily quiet; but with the wear that is inevitable to continued use, they may become less quiet. Insufficient lubrication or inadequate cleaning will, naturally enough, cause the wear to progress at an excessive rate, with the consequence that the cameras soon become objectionably noisy. With proper lubrication and cleaning, however, this is minimized.

The problem of repair and replacement is important. With proper attention paid to the maintenance of cameras, the need for such repairs is small, and major replacements need only be occasioned by actual breakage. Improper servicing, however, or overhauling and repairing by incompetent personnel, invariably necessitates a greater or lesser degree of replacement.

Since the studio cinema camera is essentially a precision instrument of the highest grade, it naturally requires specialized equipment and personnel if it is to be repaired properly. Experience has proved that such personnel is rarely available outside of the plants of the actual manufacturers of the equipment. Moreover, only in such plants is it possible to routine such work with the requisite degree of specialization. In the manufacturer's plant, for instance, such repair work is handled with the same degree of spe-

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CAMERA UPKEEP calls for machinery such as this jig borer, as well as many other pieces of equipment specially constructed for the manufacturer of the present day precision cameras.



TREND

- A NEW photographic spark has been developed according to an Associated Press dispatch that is ten thousand times faster than a

photographer's flash lamp and as bright as 3000 incandescent lamps rolled into one. This news was carried in a publication of the American Institute of Physics.

This article claims the flash has taken 4200 distinct pictures in one second. Its application, however, at present is limited to photography in darkness as it is not used with a shutter. This photographic spark is described as a small tube operating on the neon lamp principle.

Instead of neon gas, the tube contains mercury vapor and the mercury flashes blue when a current is shot through it.

The light was developed by Harold E. Edgerton and Kenneth J. Germeshausen at the Massachusetts Institute of Technology.

The light has been used to photograph the surging wave which passes through the speeding spring of an engine valve and to "stop" and photograph the vibration of machinery.

It is claimed with the speed flash, clear pictures can be taken on continuously moving film without the "frame" stops created by the shutter.

- WITH the recognition of Sound on 16mm Film the Industrial Field will come in for a great deal of attention. It is the belief that the development of this phase of the narrower film will mark a definite and big stride into this branch of production. While 16mm is not unfamiliar to the industrial picture, still it has been lacking sound, excepting in those instances where a record was made a part of the picture. However, with the greater ease of handling the combined sound and picture on one media there is no question of the great strides this narrow film will make in the business world.

With only one marketable development at the present time on the market, and other engineers striving to duplicate the 35mm in its technical details it is believed that interesting results are promised.

What is termed the semi-professional field will possibly find the greatest use for the sound development. The picture will be taken on 35 mm. film and then reduced to the 16 mm. for distribution by the industrial concern because of the greater convenience for handling and projecting.

- WITH the closing of the Amateur Movie Makers contest the last day of October interest is rife not only among the hundreds of thousands of amateurs, but with the dealers of amateur equipment as to just who will win this prize. The nature of the subject, the reasons for the judges' decisions are vital questions to the Amateur. While the closing date of the contest was October 31, this means that films must show shipment or mailing not later than that date, with the result some are still arriving at the offices

of the TIMES

of the AMERICAN CINEMATOGRAPHER, especially from abroad. However, the winners will be announced in the December issue of this magazine, which will be a SPECIAL AMATEUR NUMBER.

In addition to the announcement of the winners, that edition will also contain articles for the Amateur by Ann Harding and Leslie Howard on acting. These two stars will give the Amateur the fundamentals in acting as it is needed by them for the production of the picture they will make. Norman Taurog, who was last year's winner of the Academy Award for his direction of *Skippy*, will also contribute an article on direction with many valuable suggestions to the amateur. Grantland Rice, noted sports writer and famed for his *Sport Reel*, will tell what to shoot in sport events. Elmer Clifton will cover "Scenics" and Joe Hubbell, Pacific Coast editor of Fox Movietone News, will assign news events to the Amateur. Blanche Sewell, who edited "Grand Hotel," will give from her rich knowledge to the Amateur on the business of cutting and editing. John Arnold will tell about the wonders of the Amateur Camera.

There will be purely technical contributions and contributions from amateurs themselves.

- TAKING his stand between two of Hollywood's largest studios a new type of huckster has sprung into prominence. He sells rolls of toilet paper.
- SEEMINGLY there is going to be a shortage in the "short-ends" market. Many of the 35mm amateurs and semi-amateurs have been depending upon the short ends coming from the studios for a source of supply at a very reasonable price. However, the very efficient studio technician has now discovered a way to utilize these short ends in the studio.
- THE radio police know their Hollywood. The other evening the raucous command went over the radio "Go to umpty umpty street and see a lady about a nuisance." Hasty and close checking by the police found every supervisor at home.



IN SELECTING directors—and certainly the director is the most important single factor in the success of a motion picture—there are men of the following four professions who are most eligible: Assistant directors—writers—cutters—cinematographers.

Assistant directors, by the very nature of their work, are eligible to promotion if they have the spark of creative spirit necessary to take the responsibility of turning out the product which producers demand. They are handicapped, however, by the fact that they know nothing except their own work. They are not writers, nor do they know how to cut pictures. And they know little about photography.

Writers often qualify as directors, but they are exceptional writers, capable of visualization to a marked degree. They must have the ability to see before they can qualify as directors. Writers who simply create words cannot make the grade. Writers, by the nature of their work, instinctively know some of the fundamentals of cutting. But they, in turn, know nothing about photography.

Cutters learn the business of directing rapidly because they handle the product of the directors. They absorb the mechanical details and the touches of genius which the director gives the picture, but they are not in direct contact with the director during the filming of the product.

Of the group mentioned above, the only man who is actually on the set watching the director work is the assistant director. The writer is in his office theorizing over camera work, guessing at the technique of the director. The cutter is laboring in his laboratory with technical problems.

The assistant is on the line of skirmish, watching the actual work being done. But he, in turn, is not able to give much of his attention to the camera, no matter how observant he is. He has more or less petty details to consider, which dwarf his ability to concentrate on problems not his own.

Now we come to the cinematographer.

He is actually on the scene. That is one thing. Another is that he is working hand in hand with the director at all times. Still another is that the director, in final analysis, depends entirely on his work. Then, too, his work is visual leaving his ears free to hear the words the players speak as the story unfolds. He can very easily make a study of dialog.

In the entire motion picture industry there is no one who can so closely observe the work of a director and who at the same time sees the unfoldment of a motion picture story as can the cinematographer. I do not see why, if a photographer is observing, intelligent and well-educated and has the ability to handle men and women, he should not develop into one of the best directors in the industry.

In fact, there are many examples of camera men who have developed into splendid directors. Of recent days, we have developed our own Carl Freund, cinematographer with 500 pictures to his credit. Rouben Mamoulian is another example of a cinematographer who has made a brilliant success of directing.

You who read the *American Cinematographer* know who the others are. There is no use filling a page telling you about them. In many cases, they are friends of yours.

A cinematographer who knows camera values, who knows production values, who knows every element which goes into the making of a scene, from a player's gesture to the texture of the curtains on the windows, should go even farther than a director's chair. He can use the knowledge which he picks up as an executive.

The qualities which I think a cinematographer needs to

Carl
Laemmle
Jr.



Why I Choose Cinematographers As Directors

by
Carl Laemmle, Jr.

General Manager,
Universal Pictures Studio

become either a director or an executive, are (1) observation, (2) creative ability and (3) a sense of the dramatic.

Observation we have already covered. Without it, any cinematographer or anyone else, for that matter, is lost. One who cannot observe cannot learn. And in the motion picture industry as in all industries, there is no time to coach the slacking individual.

Creative ability already is necessary to the cinematographer. If he is a good one, he is constantly devising new lighting effects, unusual camera angles. He will still carry on this function as a director, but will expand his field to deal with human beings and their emotions, story plots and other factors. It is safe to say that the cinematographer who becomes a director and who already has exercised his ingenuity will find that he has much more chance to put his original ideas into effect because of the many more factors involved.

A dramatic sense is absolutely necessary.

On this qualification hangs the success of the camera man who becomes a director.

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THRU the LENS

of the CRITIC

"SIX HOURS TO LIVE"

photographed by **John F. Seitz, A. S. C.**

"SIX HOURS TO LIVE" is greatly enhanced by the finest photography of many months. It is the first picture since "East Lynne" to give John Seitz, A.S.C. a chance to demonstrate the superlative artistry that has made his name famous among cinematographers for so many years. The production is richly mounted, and Seitz' treatment adds to this richness. Throughout, the tonal quality and gradation are superb, while the dramatic moods—which cover a considerable range—are perfectly sustained. The lighting and composition are in every scene well up to Seitz' high standard of perfection. The lighting, incidentally, covered an unusual range from extreme low-key effect scenes to extreme high-keys, all of which were handled perfectly, and intercut smoothly. The effect-lightings were unusually interesting, and added more than a little to the dramatic effectiveness of the picture, while the special-effects photography—particularly in the revivification sequences—was also noteworthy. The consistent use of moderately heavy diffusion was extremely welcome after the present trend toward exaggerated sharpness. Wilhelm Dieterle's direction was thoroughly photogenic. Camera-movement was held to a minimum, and used only when necessary. The only criticisms possible are that extreme big-head closeups were used rather too frequently, and that Warner Baxter—ostensibly the star of the production—was at times slighted in both composition and lighting during the earlier sequences. In the main, however, the photography is superb—quite the finest since the release of "Arrowsmith" and "Shanghai Express;" it is, if anything, a trifle better than even these two.

"DOWN OUR STREET"

photographed by **Rudolph Mate.**

RUDOLPH MATE is recognized as one of Europe's foremost cinematographers, and even in this unpretentious little quota picture he proves himself an artist and technician of the first order. His treatment of the picture is consistently fine throughout, with the players excellently photographed, natural and effective lightings at all times, and some very good effect-lightings. The photography is at all times excellently keyed to the mood of the scenes and story, without at any time being obviously "arty." There is quite a bit of transparency process work in the picture—the first that I have noticed in a European film. It is excellently done. There is a world of atmospheric value in the sets and characters. While this department is as a rule devoted to the strictly technical phases of production, one cannot but digress for a moment to pay tribute to Nanci Price for the finest portrayal of maternal psychology that has ever been screened. The film was directed by Harry Lachman, now under contract to Fox Hollywood Studio, who proves himself clearly a cameraman's director, with a fine appreciation of the value of the pictorial as well as of the purely dramatic. His achievements in this unpretentious quota picture, which,

he informs us, was made in less than two weeks, with but three sets, and for a cost of \$36,000, augurs well for his future accomplishments here, with the facilities of a great studio behind him, and working in collaboration with American cinematographers.

"TROUBLE IN PARADISE"

photographed by **Victor Milner, A. S. C.**

WHENEVER the team of Milner and Lubitsch set out to make a picture, audiences may be sure of something outstanding in entertainment, direction and photography; but in "Trouble in Paradise," these gentlemen have excelled themselves. And that tells the story better than any number of adjectives could; for if Victor Milner has excelled his past achievements in photography, and Ernst Lubitsch has excelled his past achievements in direction, what more can be said? Nothing can be added to perfection. "Trouble in Paradise" is a picture well worth seeing several times; first of all because it is entertainment of the finest; and many times thereafter because Milner's photography and Lubitsch's direction reveal new facets as they are studied more and more closely.

"SMILIN' THROUGH"

photographed by **Lee Garmes.**

IN ANY ONE month, "Smilin' Through" would have stood head and shoulders above all of the month's releases; as it is, "Smilin' Through" is a very close second to "Six Hours To Live." Lee Garmes' treatment of the picture evidences the same artistry which has placed his "Shanghai Express" among the three nominees for the Academy Photographic award, and which, by the time this reaches print, may well have brought him the coveted golden statuette. Inevitably, a story such as "Smilin' Through" demands the utmost in pictorial cinematography; not only has Garmes fulfilled this requirement, but actually exceeded it. Every scene is a pictorial gem, softly beautiful, yet technically perfect. The lighting covers quite a wide range of keys and moods with consummate artistry. The double-exposure scenes of "Moonyeen's" return, and of Leslie Howard's death are beautiful, and rendered more effective by the technical skill which concealed every trace of the mechanical means used in their making. The makeups used by the principal players who essayed dual roles was excellent except in the case of Leslie Howard, whose makeup as an ageing man was not quite convincing.

"AIR MAIL"

photographed by **Karl Freund, A. S. C.**
aerial sequences by **Elmer G. Dyer, A. S. C.**

THIS IS BY FAR the best, as well as one of the most accurate of aerial films. Karl Freund's treatment of the body of the production is excellent, if perhaps a trifle uninspired. It is a pity that, before being appointed a director,

Freund could not have had the opportunity of making an American film in the same mood as his German successes like "Metropolis" or "Variety." "Air Mail," however, is excellent, with a finely artistic treatment of its simple and rather unpictorial sets, excellent lightings both of characters and sets—including some quite interesting effect-lightings. But a picture of this type inevitably offers the most spectacular opportunities to the Akeley and Aerial specialists. In this case, Elmer G. Dyer, A.S.C., is the man in question, and he has never done better or more spectacular air work. Paul Mantz, specially credited for the stunt flying, has created a mark for all future pilots to fly at—but he could not have done so had there been a less accomplished aerial specialist than Dyer at the camera. The miniature and process work is probably the most convincing that has ever been put into an aviation film.



"GOLDEN WEST"

photographed by **George Schneidermann, A. S. C.**

THIS IS ONE of the best "Westerns" in some time. The photography throughout is excellent, especially in the earlier sequences, which are laid in the pre-(civil)-war South. The treatment of the various interiors in this part of the picture is unusually fine, and makes one wish that Schneidermann might occasionally be assigned to more pretentious productions, despite his acknowledged skill in squeezing maximum screen value out of every cent spent on an outdoor film of this kind. In this same sequence, too, there are some noteworthy night-effect scenes. "Golden West" is, however, most interesting as an example of what skilled technicians can do to make an inexpensive picture show up like the proverbial million dollars on the screen. Schneidermann, in the first place, has done amazing things by calling upon his experience in the making of "Westerns:" he has made half a dozen covered wagons seem like a vast caravan, and multiplied eight buffalo into a herd of apparently thousands. The trick cinematographic staff has aided him, using practically every process known, with the exception of miniatures. The transparency and glass shots are particularly good. Last of all—but far from least—the cutter has delved into the files, and come forth with an armful of stock shots from "The Big Trail" and "The Iron Horse" which, cunningly intercut among the scenes actually made for the production, add immeasurably to the production value. This padding, of course, tends to make the photographic quality a trifle uneven, especially some of the ten-year-old scenes from "The Iron Horse." Late in the picture there are a couple of Akeley shots—possibly of ancient vintage—which are extremely bad, being under-exposed and badly out of focus. On the whole, however, the picture is a credit to its makers, and merits careful study by both professional and amateurs.



"THE BLONDE VENUS."

photographed by **Bert Glennon.**

HERE again we see a great director—one who really knows his medium—making elementary mistakes in his attempt to maintain his reputation for greatness. Such a picture was a most unfortunate one for Bert Glennon's return to camerawork after a period in other fields. Yet, working with Josef von Sternberg, who is one of the really few directors who has the technical and artistic ability to be, if he chose, an equally outstanding cinematographer, it should have been a most auspicious occasion. Between the pictorially-minded Sternberg and Glennon, who has done such magnificent productions as "The Ten Commandments" and "The Patriot" (the latter still to my mind the one perfect film ever made), "The Blonde Venus"

Continued on Page 44

THE MONTH'S THREE BEST



Victor Milner



John F. Seitz



Lee Garmes

STILL CONTEST WON BY SOPHIE LAUFFER, F. R. P. S.

FIRST PRIZE in the Still Photography contest conducted by the AMERICAN CINEMATOGRAPHER during the past year has been awarded to Sophie L. Lauffer, F.R.P.S. of Brooklyn, N. Y. for her picture "Vanity." The second award is to D. Schneider, Oelwein, Iowa, for "At Grandmother's Knee." The third prize goes to Frank Tanner, Venice, Calif., for "Shattered Dreams." Honorable mentions have been accorded to Nicola Buzzo, C. J. Meyer, Clarence Slifer, Karl A. Barieben, A.R.P.S., Morgan F. Reynolds, Augustus Wolfman, C. J. Belden, Bruce Lindsay, H. M. Armstrong, Allen Fraser, Harry Adams, Gordon Head, Billy Fox and Mike McGreal.

The judging was done before a special meeting of the Board of Governors of the American Society of Cinematographers. The actual judging was done by a special subcommittee appointed for the purpose by President Arnold. This committee was headed by First Vice President Arthur Miller, A.S.C., who is also chairman of the Society's Exhibition Committee.

According to Mr. Miller, this task was rendered unusually difficult by the merit and number of the competing prints. "All of the contestants are to be congratulated," said he, "upon the high standards of quality shown in their work. Judging this contest was a pleasure to all of us, despite the difficulty of selecting the three best prints out of so large a number of excellent ones.

"Mrs. Lauffer's print, 'Vanity,' however, was from the start the unanimous choice of the jury as the best print in the competition. The photographic quality of both print and negative are excellent; the composition and lighting notable, and the conception and treatment of the subject are clearly the work of a true artist.

"Awarding the second prize was extremely difficult. There were a dozen or more prints of a quality that would, in most contests, have merited premier awards. The final selection was made only after a very careful weighing of the individual merits of each of the many prints under consideration. 'At Grandmother's Knee,' submitted by D. Schneider, was eventually chosen for the Second Award because of its virile treatment of a subject which could easily have been rendered mediocre through conventionally sentimentalized treatment. In this print, as in the one gaining First Honors, the artist has avoided the obvious in both subject and treatment, maintaining the highest standards of both photographic and pictorial quality, and adhering to the strictest simplicity throughout.

"Frank Tanner's 'Shattered Dreams,' winner of the Third Prize, is also a splendid combination of simplicity of subject matter and treatment, and a masterpiece of effective mood-lighting.

"Among the Honorable Mentions, the prints contributed by Nicola Buzzo, C. J. Meyer, H. M. Armstrong and Clarence Slifer are particularly noteworthy. Their prints exhibited a high degree of artistic and photographic proficiency, and—especially in the instance of Meyer's contribution—a very pleasing originality of conception."

HONORABLE MENTION

Nicola Buzzo, C. J.
Meyer, Clarence Slifer,
Karl A. Barieben, A.R.P.S.,
Morgan F. Reynolds,
Augustus Wolfman, C. J.
Belden, Bruce Lindsay,
H. M. Armstrong, Allen
Fraser, Harry Adams,
Gordon Head, Billy Fox
and Mike McGreal



"Vanity" • Sophie L. Lauffer, F.R.P.S.

FIRST PRIZE



"At Grandmother's Knee" • D. Schneider

SECOND PRIZE



"Shattered Dreams" • Frank Tanner

THIRD PRIZE

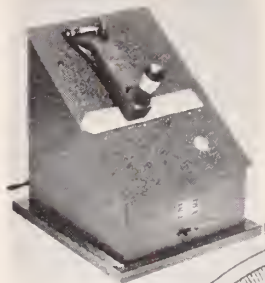


Fig. 15

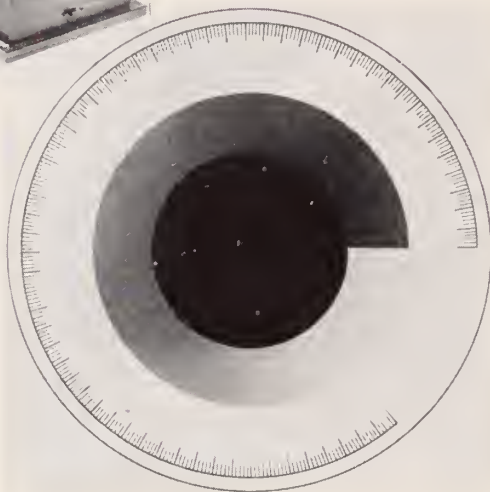


Fig. 18

Part 18

THE SECOND instrument referred to in the last article which is in common use in the motion picture laboratories at the present time is the Eastman densitometer.* This instrument is based upon the inverse square law and is designed to fulfill several conditions, namely: ability to read densities from 0.0 to 3.0; capable of measuring very small areas ($\frac{1}{2}$ sq. mm.); the same light source illuminating the density to be measured and furnishing the comparison beam; the scale of the instrument so adjusted to read

*Extracted from Communication No. 331 from the Kodak Research Laboratories.

Construction of a Practical Densitometer

by

Emery Huse, A.S.C.

direct density; and the instrument designed to be portable, compact and inexpensive.

The Eastman densitometer fulfills all of the above mentioned conditions very capably. Figure 14 shows diagrammatically the photometric arrangement of this instrument. It consists of a light source A both for illuminating at H the density to be measured and for furnishing the comparison beam; a photometric field at G obtained by the aid of the mirrors, B, D, F, and G; a photographic wedge W for decreasing by a known amount the intensity of the light illuminating the density; and an eyepiece J for viewing the photometric field.

A general view of the instrument is shown in Figure 15 and working drawings in Figures 16 and 17. The essential parts are mounted on $\frac{1}{4}$ inch aluminum; this aluminum also acts as a cover for the instrument case. The interior of the box is painted white with the exception of the aluminum cover, which is black. The light source A is a 5 volt, 4 ampere, 32 candle-power, automobile headlight lamp. This type was chosen because it would burn in a horizontal position without the filaments sagging. In order to permit the use of 110 volt, a-c line, a small toy transformer is introduced into the circuit. One beam of light from this lamp passes through the circular silver wedge W (Fig. 14), rotating on the pin P. The photographic wedge is made by copying on a sensitive plate a circular gelatin

Continued on Page 36

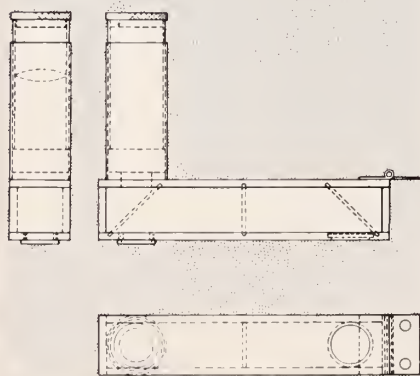


Fig. 16

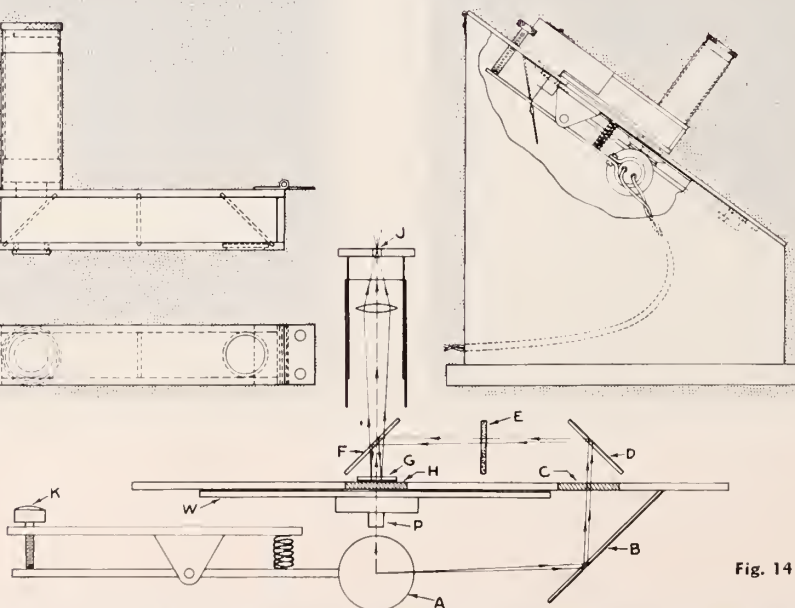


Fig. 14

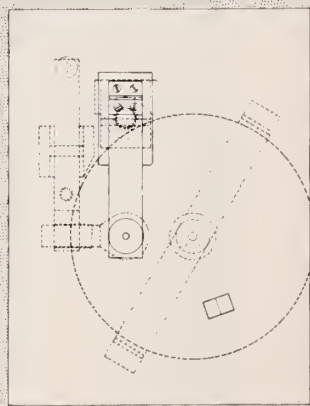


Fig. 17



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NEW YORK

HOLLYWOOD





RIDDLE

ME THIS

THE RIDDLE:

On several recent German productions, two cinematographers have been given screen-credit; one for the interiors, and one for the exteriors. Is this, in your opinion, to the best advantage of the production and the cinematographers in question?

WILLIAM DANIELS, A. S. C. I do not feel that it is advantageous, either to the production or to the cinematographers concerned. A First Cinematographer, if he is at all worthy of the trust placed in him by the producer who gives him charge of the photography of a production, should be equally capable of photographing indoors or out. Moreover, exterior photography is far easier than is the making of interior scenes. Personally, when I reach the exterior sequences on my own pictures, I feel as though I were having a vacation.

GEORGE SCHNEIDERMAN, A. S. C. To my mind, this is added evidence of the degree of specialization being demanded of cinematographers. Theoretically, any man who has attained the standing of a First Cinematographer on a major studio's productions should be, and is, capable of meeting any photographic problems that may arise, whether they arise out of doors or on the studio stage. He should be able to turn out whatever style of photography the picture in hand may require. In practice, however, things are different: Cinematographers are typed quite as much as are actors—and for much the same reason. Experience has shown the producers that certain individuals excel along definite lines; and it is only good business to keep the square pegs in the square holes. There are, for instance, five or six cinematographers, like Dan Clark, A.S.C., Archie Stout, Ted McCord, Joe August, and myself, who have over a period of years proven that they know how to make outdoor pictures in which a

minimum of expenditure will yield a maximum of production value on the screen. Since the producers know that they can rely on the experience of such men 100%, they have accordingly "typed" them as "Western" specialists, despite the fact that these same cameramen have frequently proven themselves equally capable on studio-made, interior pictures. The majority of them have, too, handled retakes and added scenes for pictures made by some of the outstanding interior-lighting specialists like John Seitz, A.S.C., Victor Milner, A.S.C., George Barnes, and others, with such success that not even a trained cinematographer could distinguish which scenes were made by one man or the other.

I can, therefore, though deploring the tendency toward over-specialization among cinematographers, appreciate the producer's viewpoint in assigning one man to handle the interior sequences of a production, and another to handle the exterior ones. He reasons—and not altogether wrongly—that each man, being a specialist in his particular field, will deliver maximum value with the minimum of risk. Neither cinematographer should, therefore, feel that this specialization of assignment is in any way derogatory to his ability or standing. After all, none of us feel ashamed of calling on an Akeley specialist like Elmer Dyer, A.S.C., for assistance in trick or process work. The instance we are discussing, where two men were credited separately for their specialized work on the interior and exterior sequences, is merely a further development of this same trend.

HAL ROSSON, A.S.C. I don't see that there is any reason for such a practice. Any cameraman worthy of the name should be equally at home on the stage and out of doors. In either place, the problem is essentially the same: exposure, lighting and composition. If a man can master these on the stage, he should certainly be able to do so on exteriors, where the problems are so much simpler. It may be argued that the questions of filtering and the



Using booster lights and reflectors on exterior set.

sensitivity of different emulsions to natural light and under different atmospheric conditions, are less familiar to the man whose work is normally done indoors and with artificial light; but with the research facilities of such an organization as the A.S.C. available, and with the co-operation of the laboratory and photographic experts of the principal film manufacturers likewise at his disposal, the cinematographer who fails to keep abreast of every phase of production cinematography, indoors or out, deserves no sympathy. I do not regard the policy of assigning two men for specialized scenes as necessarily either improving or injuring the artistic quality of the picture, however; but if a single mind is directing the photographic treatment of a story throughout the course of production, it stands to reason that the completed film will be a more coherent artistic unity than it could be with several men working out their ideas on it.

GAETANO GAUDIO, A.S.C. For myself, I can see no reason for such specialization. If a man is a good enough first cinematographer to be trusted with a production that may cost anywhere between \$200,000 and \$1,000,000, he should certainly know enough to be able to handle a camera quite as well out of doors as indoors. But I realize that there are certain men who have gained a big reputation as out-door specialists — and vice versa. If a producer has an essentially exterior picture scheduled—say a South Sea Island story, where the exteriors must be superlatively beautiful—does he say, "Let's get Tony Gaudio, or Johnny Seitz, or George Barnes?" He does not! He says right away, "We've got to have Clyde de Vinna!" Then, if the same producer has a story like "Mata Hari," or "Grand Hotel" coming up, does he think, "Let's get Clyde de Vinna?" Not a bit—he says, "Get Bill Daniels, or George Barnes, or Tony Gaudio." Yet you could change these assignments around and be equally sure of getting a good picture.

As long as a man knows what effects he can get with his film, filters and lights, it does not matter what kind of a picture he is given. If he is a good cameraman, he will bring back a good picture. Provided, that is, that he has a chance to do good work. You can put the same man in two successive pictures; if one has a schedule of, say, two or three weeks, and the other is allowed two or three months, there's no guessing as to which picture will be good, and which will be bad photographically. It takes time to get the lighting and so on of any shot perfect; if you have to hurry through anyhow, you can't do as well as though you had time to see that every detail was perfect.

That's got a lot to do with interior work—and it has everything in the world to do with the results you get when you go outside. You can't make the weather behave to suit you—you've got to wait till it happens to do what you want. Suppose a producer is sending two companies to Catalina for location work; first he sends me. I have no luck with the weather; maybe it is cloudy all the time when I want sunlight; maybe it is hot and sunny all the time when I want it foggy for rain scenes. Anyway, I don't have time to wait; the picture is already sold, and I must have it in the box by such-and-such a day. Very well; I shoot—and I bring back a picture I am ashamed to show anybody. A week later, the producer sends the other company over to the island. Joe Doakes is shooting it; he has the breaks; the weather is just right, and maybe that picture has a longer schedule, too. Anyhow, he comes back with a beautiful picture. The producer is not a cameraman, so do you blame him when he says, "Joe Doakes is a wonderful cameraman for exteriors—but that Tony Gaudio he is lousy!" Then, when he has a special South Sea picture, which he is going to

THANK YOU!

"RIDDLE ME THIS is a great department. Keep it up," says "Camera."

"That RIDDLE ME THIS department is the talk of the cameramen of Hollywood," says E. I.

"Do not ever leave the RIDDLE ME THIS department out," writes "New York Cameraman."

"Reading RIDDLE ME THIS is like being back with the gang in Hollywood," writes traveling News Cameraman.

"Give us something on sound in RIDDLE ME THIS," says "Decibel."

"Give us more RIDDLE ME THIS," says "subscriber."

make in Tahiti, with plenty of money and time to spend, who does he think of, Joe Doakes or Tony Gaudio? You bet—Joe Doakes is an exterior specialist from then on!

JAMES WONG HOWE. It seems like a good idea to me, providing that both men are equally good in their specialized fields. Some men naturally prefer to work on exteriors; some prefer to work on interiors. Personally, I do not enjoy working outside nearly as much as I do working on the stages. On interiors, you must create something from nothing, using your imagination and your knowledge of composition and lighting as tools. On exteriors, you are circumscribed by the stone wall of reality. You can manage to get a certain amount of the pictorial illusion through careful composition and filtering, but you cannot do nearly as much as you can with your complete control of the lighting on the stage. Having more to work with, and a freer play for your imagination, you are less in danger of getting into an artistic rut, and letting your work become stylized. So personally, I am heartily in favor of such a plan wherever the production in hand warrants it. Of course, it would be foolish to engage another First Cinematographer to do the exteriors alone if there were but a half-dozen or so exterior scenes in the picture; but if a large portion of the picture is played in exteriors, with an equal portion played in interiors, I can see that in many cases the production would benefit enormously, especially if the two men chosen were able to coordinate their work well enough to avoid artistic or technical conflict between their respective contributions. I do not feel that it would injure my standing as a cinematographer to have an artist like Dan Clark or Clyde de Vinna handle the exteriors any more than it does when I delegate aerial sequences to a recognized aerial specialist like Elmer Dyer. If my work on the sequences which I DO handle personally is satisfactory, I am sure that the producers, the directors, the players and my fellow cinematographers will recognize it as such, and not in any way condemn me for being willing to share the responsibility and the credit with a fellow artist who is a recognized specialist in his field.



WHEELS OF INDUSTRY

● A BIT of information issued by E. Leitz Inc. in their dealers' bulletin for September will prove instructive to the users of the Leica Cameras. While the bulletin goes into great detail as to the object on the film and the object in actual motion, the rule as we interpret from their instructions to obtain maximum speed results is that the shutter should always release in the same direction as the object is moving; that is, if your moving object is coming from the right you will hold your camera in the usual horizontal position; if from the left the camera is turned upside down. For diving pictures the camera would be held vertical so that the shutter releases from top to bottom.

● HOLLYWOOD Motion Picture Equipment Co. in the last month moved in to new and more commodious quarters at 645 N. Martel Ave., Hollywood, Calif.

This move had been contemplated by Art Reeves for several months because of the added space he has found more necessary every day with his increasing business. His new building gives him practically double the facilities of his old location.

● ACCORDING to an announcement emanating from the New York Debie service station, a number of the special cameras made by Andre Debie for the United States Government and used by naval aviators have been sent to the service station for their first examination. These cameras include the famous Ultra Speed "GV" and have been in use by the Government for a period of years.

● VICTOR Animatograph Corporation has taken over the manufacture and sale of the 16 mm. Simplex film cleaner.

Victor is manufacturing only the improved model C which involves three film cleaning processes—immersion in cleaning fluid, passage between saturated stationary pads and light polishing between revolving felt discs.

● FACTORY surveys of the Universal Microphone company indicate ninety percent of microphone repair work can be traced to those curiously inclined who poke an inquiring finger into the open face of the mike.

This firm also announces several new model mikes for public address systems as well as models to be used in connection with talking film, home recording and "baby mikes" to be hooked up with receiving sets.

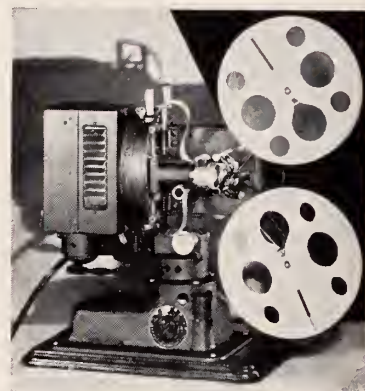
● A NEW 8 mm. camera and projector have just been announced by the Eastman Kodak Co. The camera is the Cine Kodak Eight, Model 60. It is closely similar to the original Cine Kodak Eight, but is fitted with an f:1.9 Kodak Anastigmat lens, which is readily interchangeable with an f:4.5, 1½ inch telephoto lens, which gives a magnification comparable to that of the familiar 3 inch telephoto available for the 16 mm. Cine Kodaks.

The new Kodascope Eight projector, officially termed model 25, takes its place as an intermediate model between the present model 20 and model 60. Its principal features are added screen brilliance, and the ability to operate on either alternating or direct current from 100 to 150 volt lines. These two new instruments definitely round out Eastman's line of eight millimetre apparatus.

● THE HUGO MEYER & Co., Drem Cinemeter which is described by that company as a simpler edition of the Drem Exposure Meter operates similarly to Dremoscopy, but is specifically calibrated for all movie cameras. It indicates automatically proper stop to use with corresponding shutter (frames per second) speed, with and without filters. It is the contention of the makers it will be found of great value to the many users of Kodacolor pictures who are now taking advantage of the many colors the autumn produces. The Drem Cinemeter is furnished in a fine sole leather carrying case easily attached to belt, button or camera strap. This firm also has issued a pamphlet of complete instructions for the use of the Leiascope which is a meter for use with the Leica camera.

● THREE NEW projectors for 16 mm. use have been launched on the market by The Victor Animatograph Corporation. They are their model 10 regular which supplants models 3 and 7; their Premier Hi-Power model 10 F-H and Universal Hi-Power model 10 R-H.

The Model 10 Regular is supplied with 400 watt-110, 115 or 120 volt lamp. It may be used with 200 and 300 watt lamps if desired. It includes the Victor 4-point film protection with automatic film trip, the adjustable shuttle, and the built-in automatic 3-way rewind. It is the claim of the manufacturer that this projector is more quiet and smooth running than its predecessors.



As standard equipment with the Premier Hi-Power model 10 F-H a 400 watt-100 volt biplane filament lamp is supplied; however, 200, 300 and 400 watt lamps of line voltage ratings may be used. It is the contention of the Victor Animatograph Corporation that the combining of the 100 volt, 400 watt lamp with their recently perfected optical system makes the projector suitable for long projection throws, large images and daylight projection because of the intense illumination. The lamp is adjustable in five volt steps according to the announcement, for line voltages of from 100 to 120 volts which is said to eliminate the

Continued on Page 38

THE OLD ERA WENT OUT WHEN THIS FILM CAME IN!

HERE are some of the contributions which Eastman Super-sensitive Panchromatic Negative has made to the motion picture industry: greater artistic opportunities for the cameraman...adaptability to any kind of light...lowered lighting costs on the lot and in the studio...lessened strain for director and actor...greater latitude for the laboratory...better prints for the exhibitor... All along the line there have been changes in procedure and improvement in results. In fact, the old motion picture era definitely went out when this film came in. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN **SUPER-SENSITIVE**
PANCHROMATIC NEGATIVE (GRAY-BACKED)



KEEPING UP with the AMATEUR

COLOR, STOPS, INTERIORS DISCUSSED

by

William Stull, A.S.C.

DECIDEDLY, Autumn is the most colorful season of the year. As the foliage begins to turn from green to shades of gold, crimson and sere brown, all nature seems to be conspiring to persuade us to try a roll or two of Kodacolor. Up to this year, however, as experienced cine workers know to their past sorrow, Kodacolor has been more a medium for closeups and medium shots rather than for landscape work; but with the new Super Sensitive variety lately available, things are as changed as the color of the leaves. So—what can we do about Kodacolor landscapes?

In the first place, let's consider how to get the best results in ordinary black-and-white landscape work. Let's see—Panchromatic film (preferably Super Sensitive) and filters, of course; for regular Pan, the G filter is the best, and for Super Sensitive, the 23-A. Then, lighting: cross-lighting, with nice, long shadows to give relief is by far the most pleasing, although on some occasions back-lighting (with the lens encased in a deep lens-hood) is very effective. Lastly, composition: landscape scenes are vastly better if they are carefully composed, with something in the foreground to lead the eye to the more distant parts of the scene, and weld the whole together into a complete artistic unit. This "something" may be some tree-branches, framing the top or sides of the picture, or it may be merely some rocks, a knoll, a fence, or a road placed so that it helps the eye to travel into the distance.

Essentially, Kodacolor landscapes can be handled in the same way. The only filters possible, of course, are the neutral-density filters; with Super Sensitive Kodacolor, the No. 1 Neutral should almost always be used, for over-exposure washes out the colors. The matter of lighting

is slightly different, for while cross-lights may be used in color work, the best results and the most brilliant colors are had in flat front-lights, with the sun roughly behind the cameraman. Color scenes should be composed much as black-and-white scenes are, but with more attention paid to color: a spot of bright color in the wrong place can divert the attention from the salient features of the scene. The reverse, of course, is also true, a spot of bright color, rightly placed, can focus the attention of the beholder onto whatever feature is desired.

Last of all, whether the picture is in color or in monochrome, it is vital that all panoramic or tilting movements of the camera be made with a definite purpose. Panning just for the purpose of panning is extremely bad. Every pan must be carefully planned beforehand; it is not enough that the panorama begin with an interesting composition: it must also end with one. Moreover, the final composition should be one that is better and more arresting than the initial one. Every movement of the camera should, in short, lead up to a definite climax. Otherwise, it is superfluous, and disturbing to the audience. Above all, such movements should be slow and smooth—or not at all.

This—for no reason at all—leads me to wonder why it is that whenever an amateur sees a particularly well photographed scene, he immediately buttonholes the maker of that scene, and inanely asks, "What stop did you use?" Nine times out of ten, the answer to that question wouldn't help a bit. Even if the questioner did know just what stop the questionee used, he couldn't go out and duplicate the shot merely from that information. The intensity of the light, for instance, changes from minute to minute, and varies greatly with the season; while the exposure would be considerably different according to the type of camera used. If, for example, somebody told me that he had made a certain shot at f:11 with his Cine Kodak, I could not take my Filmo out and duplicate the scene just by following this information. Ignoring for the moment the remote possibility that the light would be the same on the two occasions, the difference between the relatively small shutter-opening of the Cine Kodak and the huge shutter-opening of the Filmo would be enough to give me a badly over-exposed scene. It would be the same no matter what makes of cameras were involved. The only solution of

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Without Filter



With Filter



Introducing...

CINÉ-KODAK EIGHT, MODEL 60

KODASCOPE EIGHT, MODEL 25

Another new camera and projector using the new film that cuts movie costs nearly $\frac{2}{3}$

CINÉ-KODAK EIGHT, Model 60, is equipped with a Kodak Anastigmat $f.1.9$ lens. This lens is quickly and easily interchangeable with an $f.4.5$, $1\frac{1}{2}$ -inch telephoto lens, supplied as extra equipment. The $1\frac{1}{2}$ -inch lens records distant subjects three times as wide and as high as they would be recorded by the regular lens from the same distance. When you open Ciné-Kodak Eight, Model 60, you will be struck by its resemblance to the brightly burnished and highly accurate mechanism of a fine watch. Price \$79.50, including carrying case finished to match the camera in two-toned grey cowhide.

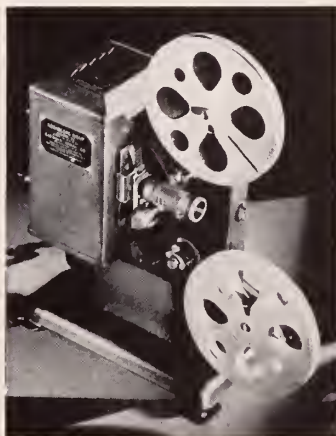
Kodascope Eight, Model 25, couples economical movie projection with added screen brilliance and the ability to operate on either A.C. or D.C. 100 to 150 volt lines. Price \$34.50.

Besides these two new members of the Eight family there are the \$29.50 Ciné-Kodak Eight, Model 20, with its $f.3.5$ lens—Kodascope

Eight, Model 20, costing but \$22.50—and Kodascope Eight, Model 60, a highly accomplished projector with unusual screen brilliance and many other refinements. Price \$75.

Two cameras—three projectors—all bring you lower cost movie making. For all use the new-principle Ciné-Kodak Eight Film that cuts movie costs $62\frac{1}{2}\%$.

See the Eights and the movies they make at your Ciné-Kodak dealer's. Spread the news to your friends who have felt they could not afford fascinating home movies.



The new Kodascope Eight, Model 25, for 100 to 150 volt A.C. or D.C. lines.

EASTMAN KODAK COMPANY, ROCHESTER, N. Y.



"Tell me Bowser, what stop did you use?"
 "Whadya mean what stop! Didn't I catch the rabbit?"

Criticising the Amateur Cinematographer

IN REVIEWING these few amateur pictures, let's for the moment get away from the technical avenues. The amateur must be more than a camera man. He must be a producer, a director and an editor. In the parlance of picture titles, "The Amateur in Four Parts."

His eagerness to expose film has cost him considerable money. It is going to continue that way. Many will have to wake up of their own accord. After they get over the "Buttonitis" they will then plan their pictures and become producers. Once they reach that stage there is great hope for them, because the direction will be the natural step and then care in editing and cutting.

However, let's consider a few pictures we recently viewed made by amateurs. They enter three classifications, drama, news and scenic.

The drama and scenic permit of production plans; however, news is where you find it and how you find it.

The bit of drama that was projected for us seemingly lacked rehearsal more than anything else. It lacked what some call the natural type of acting, but which we term the "jitteritus" of the amateur and that is his tendency to work too quickly. He is self-conscious and apparently wants to get away from the telling eye of the lens.

While the brief story was outlined in a satisfactory way, still the amateur did not have his people under control, and by the way, they were all adults. They all indicated a

"feverish" tempo that would have been fine if it were a comedy of the semi-slap-stick variety. It was light in theme, but not a comedy by any stretch of the imagination.

Briefly we would say this picture was somewhat of a replica of many employing the human element and that the players were permitted to go through the scenes too rapidly. Keep your actors down. Don't make them conscious of your direction. You will rid them of this by rehearsals. This picture showed a number of scenes where the player looked the camera in the eye too frequently. Looked to it for direction. Rehearsals and more rehearsals seemingly is the pass word for better dramatic productions.

Among the 16 mm. pictures viewed was an Equestrian Subject. This picture opened with a scene along the road leading to the riding arena. These road scenes seemed irrelevant after reaching the arena with its horses and people. It meant nothing to the picture itself. In view of the fact that the main title of the picture told what was to be expected, a bit of opening production value that would have proved interesting and aroused a few Ahs! from the audience, would have been a close up of a horse's front leg and hoof pawing the ground, seemingly anxious to get started. Then occasionally through the picture flying horses' hoofs in close ups with possibly the finale with horses' feet and a bit more than half of their legs slowly walking off the scene and fading out.

Touches fitted into action pictures like this give it the

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Forerunners of the Amateur Film

by

Guido Seeber*

Translated by
Hatto Tappenbeck, A.S.C.

EDITOR'S NOTE: This interesting article which appeared in a recent issue of "Filmtechnik," the official magazine in Germany of five leading photographic societies, was inspired by the recent development of 8 mm. film. It is the belief of the editor of "Filmtechnik" that the 8 mm. will be the final standard of the amateur and that the 16 mm. will be adopted by industrial concerns, making it semi-professional. This is the first of a series of articles which delves into the history of the narrower width films.

THE AMATEUR film as we know it today has gone through a long history of development. Soon after the 35 mm. or standard film, as we call it today, was recognized, we find inventors busy with the thought of introducing motion pictures to the masses. For a long time they were in doubt and thought it might be better to stay with the standard film; and so they produced in the course of many years a number of very simple and cheap apparatus to make it possible for the amateur to produce motion pictures on standard film. But at the same time we can see efforts being made to popularize cinematography with the use of a narrower film.

If we look at the situation of today we find that it has taken indeed more than thirty years to arrive at a width which spread quickly over the whole world and which seems to be destined in many cases not only to replace the standard film, but also to supersede it.

The reasons for its surprisingly fast spread may be seen in the facts that the largest film manufacturer of the world, the Kodak Co., made the start, that furthermore only unflammable material is used, and that finally the reversal film frees the amateur of all processing and gives excellent results at a comparatively small cost. Today there are more than forty makes of amateur cameras and projectors on the market, which proves again the interest shown in the narrow film and the hopes built on it by the manufacturers. The construction of the cameras makes it possible to obtain results comparable to those on standard film, and the ama-

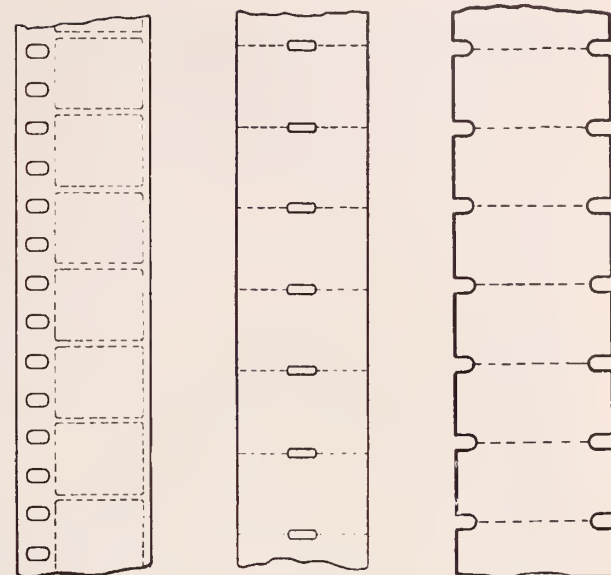


Fig. 1

Fig. 4

Fig. 6

teur projectors have been gradually perfected to such an extent that we can today project just as bright and large an image with narrow film as we ordinarily see only when using standard film.

Birt Acres of London was the first to introduce the "Narrow film." Birt Acres was the big rival of Lumiere. He photographed the English University boat races, which took place on March 30, 1895, with his "Kinetic"-camera. This was only a few days after the brothers Lumiere had registered their French patent and before they took out their English one. Birt Acres seems to have been defeated at this boat race by the length of a few days only. His English patent is dated about 5 weeks later than that of Lumiere, and he seems already to have given his first public showing in the very beginning of the year 1896.

Birt Acres plays a special part in the history of the cinematography, because he was the first one to use two sprocket wheels in his camera, one to regulate the film before and the other after it was exposed. He did not invent a new narrow film for his purpose, but simply split the 35 mm. standard film in half. Thus he obtained a film strip of 17½ mm. width (Fig. 1) which had the perforations only on one side. As this single perforation proved to be thoroughly practical he constructed an apparatus for photographing and projecting this amateur film.

As Fig. 2 plainly shows, his camera movement consisted of a beater which, according to contemporary reports, produced extremely steady pictures. The apparatus contains

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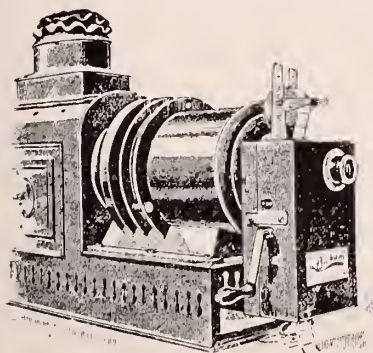


Fig. 5

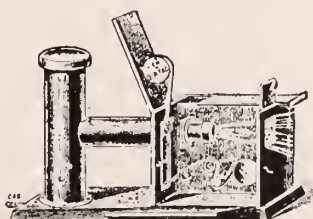


Fig. 3

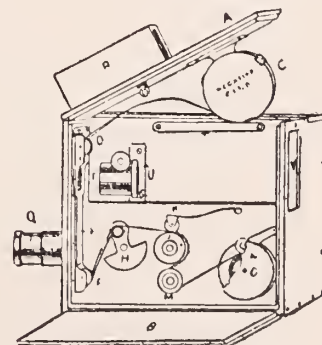


Fig. 2

*Reprinted from "Filmtechnik," Berlin



I Waited Ten Days for One Scene

WE HEARD that E.F.G. Chapman had a mighty fine reputation among the amateurs of turning out interesting and well photographed subjects. Any statement of that sort intrigues our "nose for news." We wanted to know Chapman, but right then he was in Honolulu. We knew he had to come back, so we waited patiently.

Our patience, we realized, however, was nothing compared to Chapman's after we chatted with him five minutes and had him tell us some of his experiences in picture making. The statement that not only intrigued us, but we might say flabbergasted and consternated our equilibrium was when he said "I waited ten days to take one scene."

Chapman does not confine his efforts seemingly to any one type of production. He uses the human element a great deal to add that punch and that interest that every movie maker whether amateur or professional wants to get in his production.

"I find," said Chapman, "that people are not always in the same mood every day, they are not in the mood that

activated a certain piece of business the day before. Possibly I myself have mixed my chemistry up a bit in the past twenty-four hours and I am not seeing things today eye to eye with my viewpoint of yesterday. When such a situation faces me I leave my cameras wrapped up in the moth balls. One scene eluded me in that way for ten days. Either my cast wasn't right, I was off a bit or the weather would not permit, so I waited, waited for ten whole long days. But it was worth the wait although the scene to be taken was very short. When I did get it, it was what I wanted."

Of course, everyone cannot be a Chapman, everyone cannot be a second Job for patience. Some might point to him as an extreme case. Might think he is taking it too seriously. But then, why not? He likes photography. He likes to project good pictures on his screen. He wants to make them just as good as his ability will permit. His ability is pitted against many other things. The outside influences, the human element over which he has no control.

In the professional studios, where the player is receiving a high salary he simply must be in the mood. If the light isn't right, they have the artificial light always to fall back on. The amateur cannot go toward this without building a studio of his own that involves too many thousands of dollars. So his only other recourse is patience. Wait for the scene, it will come. To mention the old bromide, do not rush to the mountain, make it come to you.

Some amateurs have not given this angle a thought. Moods are important, your own as well as the moods of the people around you. You wonder why the scenes taken one day are better than those taken another. Let's put them down to moods, or to use a professional term, tempera-

Continued on Page 33

AMATEUR FILM CONTEST

JUDGES NAMED

JUDGES FOR THE AMERICAN CINEMATOGRAPHER'S \$2,000 Amateur Film Contest have been selected. They include the outstanding Cinematographers of the Industry, and a group of the best-known Directors, Actors, Actresses, Writers, Film-Editors, Producers and Motion Picture Critics in the world. This committee will pass final judgment upon the films entered in the contest.

The members of the Judging Committee include:

CECIL B. DE MILLE, Director of "Ten Commandments," "The Volga Boatman," "The King of Kings," "The Sign of the Cross."

NORMAN TAUROG, Winner of the 1931 Academy Award for Direction, Director of "Skippy."

CLARENCE BROWN, Director of "Anna Christie" and many of Greta Garbo's greatest silent and talking successes.

CLARK GABLE, star of "Red Dust," "Hell Divers," "No Man of Her Own," "Susan Lennox," and many other films.

LESLIE HOWARD, one of the most distinguished stars of stage and screen, lately seen in "Outward Bound," "Never the Twain Shall Meet," "Five and Ten," "Devotion," "Smilin' Through," "The Animal Kingdom," and an enthusiastic Cine Kodak user.

CONRAD NAGEL, star of "Glorious Betsy," "Hell Divers," "Divorce in the Family," "The Man Called Back," "Let's Go," and for many years a maker of personal movies.

JOAN CRAWFORD, star of "Rain," "Grand Hotel," "Letty Lynton," and many of the most popular films of the last few years.

HELEN HAYES, nominated for the 1932 Academy Award for the Best Performance by an actress, star of "The Sin of Madelon Claudet," "Arrowsmith," "Farewell to Arms," and "The Son-Daughter."

IRENE DUNNE, star of "Cimarron," "Back Street," and many other hits of the past few years.

BLANCHE SEWELL, who edited "Grand Hotel" and many of Metro-Goldwyn-Mayer's greatest productions.

BARNEY WOLF, head of the Film Editing Department of the Fox Studio.

MAURICE PIVAR, Head of the Film Editing Department at the Universal Studio.

LOUELLA O. PARSONS, Motion Picture Editor of the Hearst Newspapers.

EDWIN SCHALLERT, Motion Picture Editor of the Los Angeles "Times."

HARRISON CARROLL, Motion Picture Editor of the Los Angeles "Herald-Express."

A group of three of the best-known authors and screen-writers, whose names will be announced later.

The Production Heads of the Major Studios of Hollywood.

The Cinematographers' Group includes:

JOHN ARNOLD, A.S.C., Who photographed such pictures as "The Big Parade," "The Broadway Melody" and "The Hollywood Revue," and is now head of the Camera Department of the Metro-Goldwyn-Mayer Studio.

ARTHUR MILLER, A.S.C., First Vice President of the A.S.C., who recently completed the photography of "O. K. America" and "Pier Thirteen."

FRANK B. GOOD, A.S.C., Second Vice-President of the A.S.C., one of the Industry's outstanding authorities on Color Cinematography.

ELMER C. DYER, A.S.C., Third Vice-President of the A.S.C., the World's foremost Aerial Cinematographer, whose work in making the aerial sequences of every big flying picture made during the last fifteen years is too lengthy to mention here.

GEORGE SCHNEIDERMAN, A.S.C., Treasurer of the A.S.C., photographer of "The Iron Horse," "Young America," "Golden West," and other films.

WILLIAM STULL, A.S.C., Secretary of the A.S.C. and Associate Editor of the AMERICAN CINEMATOGRAPHER, who needs no introduction in these pages.

LEE GARMES, one of the nominees for the 1932 Academy Award for Cinematography, cinematographer of "Morocco," "An American Tragedy," "Shanghai Express."

KARL FREUND, A.S.C., photographer of "Variety," "Frankenstein," "Back Street," "Merry-Go-Round," and Director of "The Mummy."

JOHN F. SEITZ, A.S.C., Past President of the A.S.C., photographer of "The Four Horsemen of the Apocalypse," "East Lynne," "Six Hours to Live," and "Lady No. 6142."

VICTOR MILNER, A.S.C., photographer of all the Lubitsch and Chevalier productions of recent years.

OLIVER MARSH, A.S.C., photographer of "Rain," "Faithless" and all of Joan Crawford's pictures for the past three years.

DANIEL B. CLARK, A.S.C., Past President of the A.S.C., photographer of all of the Tom Mix pictures of the past ten years.

HAL ROSSON, A.S.C., member of the Research Committee of the A.S.C., photographer of "Dynamite," "Madame Satan," "Tarzan," and "Red Dust."

GAETANO GAUDIO, A.S.C., Past President of the A.S.C., cinematographer on all of Norma Talmadge's films, "Tiger Shark," and "The Mask of Fu Manchu."

WILLIAM DANIELS, A.S.C., photographer of "Grand Hotel," "Rasputin," and all of Greta Garbo's productions.

FRED GAGE, A.S.C., Superintendent of Warner Bros. Laboratory.

ARTHUR EDESON, A.S.C., photographer of "All Quiet on the Western Front," "The Big Trail," and "Flesh."

ALVIN WYCKOFF, A.S.C., President of Local 659, I.A.T.S.E., photographer of "Blood and Sand," former Superintendent of the Multicolor Laboratory.

CHARLES ROSHER, A.S.C., for many years Chief Cinematographer to Mary Pickford; with Karl Struss, A.S.C., winner of the 1928 Academy Award.

CHARLES LANG, A.S.C., cinematographer on "Farewell to Arms," "Devil and the Deep," and "Thunder Below."

CHARLES G. CLARKE, A.S.C., photographer of "So This Is London," "Too Busy to Work," and "Second Hand Wife."

HENRY SHARP, A.S.C., cinematographer of "This Reckless Age," "The Man Called Back," "70,000 Witnesses," and "Madison Square Garden."

AL GILKS, A.S.C., cinematographer on "Old Ironsides" and many recent films.

HAL MOHR, A.S.C., Past President of the A.S.C., photographer of "Devotion," "Common Law," "The First Year" and "Tess of the Storm Country."

JAMES C. VAN TREES, A.S.C., Past President of the A.S.C., and photographic director of many of Warner Bros. recent hits.

SOL POLITO, A.S.C., photographer of "42d Street," "Union Depot," and many other films.

FRED W. JACKMAN, A.S.C., Past President of the A.S.C., Director of Scientific Research for Warner Bros.-First National, and one of the outstanding special process cinematographers of the world.

RAY JUNE, A.S.C., one of the nominees for the Academy's 1932 Cinematography Award, photographer of "Arrowsmith," "Cynara," and "Horsefeathers."

KARL STRUSS, A.S.C., Internationally famed as a pictorialist and cinematographer on "Taming of the Shrew," "Coquette," "Dr. Jekyll and Mr. Hyde" (for which he has been nominated for the current Academy Award in Cinematography).

JOHN W. BOYLE, A.S.C., Past President of the A.S.C., and photographer of many distinguished productions both here and abroad.

ERNEST HALLER, A.S.C., photographer of many of the foremost productions of the Warner Bros.-First National and Paramount studios during the past years.



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BLANCHE SEWELL . . . who edited "Grand Hotel" will contribute from her rich store of knowledge information on cutting and editing of pictures.

JOHN ARNOLD . . . President American Society of Cinematographers, will tell you things about the use of the Amateur Camera, its possibilities and the wonders it contains.

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Color, Stops, Interiors Discussed

Continued from Page 24

the problem would be to go out with an accurate exposure-meter, and add to its readings my own experience in photography and with my own camera.

Another thought as Autumn draws on: interior photography. In the past, interiors meant a lot of equipment and expense; but now, with Super Sensitive film, fast lenses, and the new Photoflood bulbs, interiors are easy and inexpensive. Every light-socket, every floor and table fixture, is a potential photographic lighting unit. So—why not have a try at some interiors this season? If you are one of these mechanically-inclined people who get as much pleasure from making little gadgets as you do from using them, there are several easily-made accessories which are at the same time extremely useful for interior cinematography.

The first of these is a junction-box for your lights. This is merely a cable with a gang of outlets at one end; with it, you can have the controls of your lighting right at your finger-tips, no matter where you may have to scatter the actual lighting units. The construction of this junction-box depends in a great measure upon the type and number of the lighting units used. If they are the conventional photographic lights, using 500-Watt bulbs, the electrical load will be quite heavy, necessitating a rather substantial circuit to carry the load safely. If, on the other hand, the new Photoflood bulbs, which consume only a very small amount of current, are used, the junction-box may be made much lighter, and will also carry far more units safely. In this case, in fact, the small, light junction-boxes commercially made to permit the use of several toasters, percolators, etc. at the breakfast-table, will serve, since the load is not too severe to overload the light wiring of these devices. However, such commercial products are not as a rule sufficiently durable to withstand the hard knocks of amateur studio use, nor are they fitted with sufficient cable to be truly satisfactory. Therefore, since the expense is slight, it is much better to build your own. All that is necessary is a metal junction-box, a cover, and the required number of parallel-wired gang outlets. All of these may be obtained from any electrical-supply house, and in any size that may be necessary to handle the electrical load imposed by the lights used. Such a junction-box should be fitted with at least twenty feet of cable, preferably the rubber-insulated variety known as Tirez, with, of course, a connection which may be plugged into the house-circuit outlets.

Before using such a device with the more powerful lights

(250-watts or larger), it is important to know how your house is fused and wired, for if you put a load of, say, 2500 watts on a circuit that will only carry perhaps half that load, something is bound to happen. At the least, you will blow out some fuses; at most—for instance if you have used fuses with a capacity greater than that of the rest of the circuit—you may so overheat the house-wiring as to set fire to the house. So—take that stitch in time!

Another useful accessory is a "nigger"—no, Elmer, not a gentleman of color: a flat sheet of wallboard, two or three feet wide by five feet high, fixed in a light wooden frame so that it can be stood on end, and painted a flat matte black. This "nigger" (it is also called a "gobo" in some studios) is very useful in screening the direct rays of the back-lights from the camera lens. Two or three "gobos" of different sizes are vital to the efficient making of well lit interior scenes.


Yet another easily-made and highly important accessory for interior photography is a diffuser. This is simply a sheet of muslin or tracing-cloth mounted in a frame of wood or heavy wire, so that it can be easily hooked over the different lighting units. The diffuser softens the light, and makes the photographic result far more pleasing. Of course, it does cut down the intensity of the illumination in this softening process—but the result is worth the slight loss in this respect, which is more than counterbalanced, anyway, by the fast films and lenses now available, and by the increased power of the lights. If you want artistic, natural lighting-effects, by all means use diffusers. In some cases, two or more diffusers may be used on a single light; I have seen professional cameramen using as many as six diffusers on a single unit, in order to get a certain overall level of illumination without having to use harsh, un-diffused lights to secure the high-lights. At any rate—try using diffusers on your lights, and see how the quality of your photography is improved!

**Criticising the Amateur**

Continued from Page 25

finishing touch that practically every amateur is striving to attain.

The proper stops and proper filters to use under various conditions is going to be a matter of trial and error with every one using a movie camera. They have to tackle this in the same way they would have to learn the playing of a piano. The beginner plays it mechanically. The amateur cinematographer is going to do likewise. With more practice



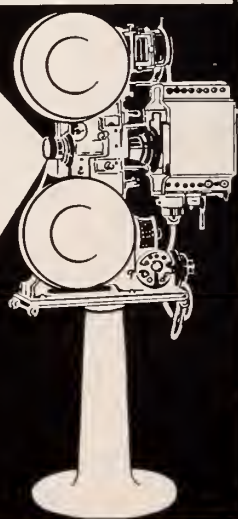
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he is going to get the "feel" of photography the same as a beginner finally gets the feel of music. It is practice, painstaking notations of what was done and how it was done under the circumstances.

Where the ingenuity and imagination is going to have free rein, and where he is going to get his greatest kick is in the production, direction and editing of what he has taken.

Among the pictures we saw in this amateur group was one of the finest pieces of photography we have witnessed in a mighty long time. It would have made some of the professionals envious. The criticism of a few of those assembled on the subject matter was that human interest was lacking. Nothing but scenery, waterfalls, flowing rivers were shown. To us it was beautiful without human interest. It was interesting. To have injected a human being in that subject would have taken a great deal away from our imagination. We were lost in the fine scenery. We might not have objected to a dog, or some other animal that we might find out in the open. Possibly a squirrel would have been more to our liking, providing, of course, the maker of this picture had a squirrel, to cut in occasionally to give the impression that this is the beautiful scene the squirrel sees. It would have had to be close ups of whatever animal was used, not in action, but serenely looking in the direction of the next scene. In other words, the picture of his animal should always have been taken from the rear. This might have added a touch, but as we hark back in our memory we should sooner have seen the picture just as it was than to have had something foreign to the subject injected.

To have people in the fore-ground when shooting beautiful scenery to us has always been distracting. Your attention focuses on those people. You have a nice setting for the human being, but the viewer usually loses the scene in its fine details. Using people, children especially in the background, in fact so far back that you do not distinguish their features, but just realize they are there, with a minimum amount of action, might possibly add to a scene of this kind, but it takes delicate handling.

This picture also had a beautiful bit of "panning," slowly, mighty slowly, at a snail's pace at times almost imperceptible. But still we agree with the professional advice, not to "pan". This picture was followed by another picture where the "panning" made our eyes almost jump out of their sockets. No attention was given to the line of movement. The operator "panned" against the action. No need to mention the results.

Whereas the other "panned" so that at the end of the "pan" there was a surprise picture. Something to admire. And still we say do not "pan." Practice on short ends, if you must "pan," but slowly, mighty slowly. But do not "pan" in your pictures.



I Waited Ten Days for a Scene

Continued from Page 28

ment. You'll find more of it among the amateurs than with the professional. They are not paid. They want to do it as they think it should be done regardless of its relation to the rest of the story.

So patience and patience in large measures is necessary to get production value.

And patience will show its values. Let's go back again with Chapman.

He was up in Yellowstone park with a still camera. Those designs some of the geysers made caught his photographic eye. He wanted one of those designs. It meant fast shooting, right on the instant to secure a picture. A picture of some odd formation. Chapman exposed twenty-four plates

and the last plate shows a dog with a hat perched on the side of his head. It took twenty-four plates and we do not know how many hours to secure the results he wanted.

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"When I go on a vacation," continued Chapman, "I am inclined to stay in one place when I am out for pictures. I find the longer I stay the more fine settings I will find all around me. When a person first arrives at his chosen site, he, of course, is impressed with the outstanding scenic phenomena that surrounds him and overlooks those many other things that contribute to the big view. The longer I stay in a scenic spot, the more of these small and overlooked views are discovered by me. They add immensely to the value of the whole picture. Cutting them in here and there they add contrast and they make for completeness."

"I spent three months in Honolulu instead of the usual two weeks to get one picture. That three months of planned and concentrated shooting was worth a year of miscellaneous exposures to me in the results I obtained. Whether they were good or bad in the judgment of others I do not know—they satisfied me."

This might seem like stretching a hobby rather far, but still a hobby is only worth the satisfied results it gives you, not the action and effort you put into it. Scattered forces, random shots and haphazard planning brings just that sort of results; a lot of film you do not know what to do with, just a bit of exercise for your trigger finger and hopes that are shattered right after the developing of the picture.



Forerunners of the Amateur Film

Continued from Page 27

a Zeiss-projection lens on the inside which is used in event one wants to project with the camera itself. Fig. 3 shows the arrangement of the apparatus for projection purposes. We want to mention here that in the beginning nearly all motion picture apparatus were built in such a way as to enable the owner to photograph, print, and project with it. It took a comparatively long time before anyone started to build special apparatus for each purpose, though it is easily understood, that such creations which are made to serve several purposes at the same time are never very efficient.

The first amateur film with a perforation in the center—also $17\frac{1}{2}$ mm. in width—(see Fig. 4) was brought out by the firm of Wrench & Son in London to be used in connection with their "Biokam." The dimensions of this small camera were $9\frac{1}{2} \times 5\frac{1}{2} \times 3\frac{1}{2}$ inches, and its price was \$33. The "Biokam" was also made to photograph, print, and project (Fig. 5). We want to mention that in those days the same apparatus was used to make enlargements on bromide paper. The lenses for this "Biokam" came from the factory of Voigtlander & Son in Braunschweig, Germany. The camera lens, a rapid rectilinear lens F:7.7 and 34 mm. focal length was constructed by Dr. Kampfer. The same type of lens with an opening of F:2.5 was used for projection. A small piece of the film protruded from the magazine. It had a groundglass surface to facilitate the focusing. Fig. 5 shows plainly how in

those days the apparatus was used for projection purposes in connection with the auxiliary lamp-houses then on the market.

Of similar construction was the miniature cinematographic camera made by Hughes in London. The center perforation of this $17\frac{1}{2}$ mm. wide film did not have the shape of a slot like the "Biokam"-film, but was square. This arrangement was made to stop the frames more surely. The camera was built for photographing, as well as printing and projecting. In order to take the film up properly it had a take-up magazine fastened onto it on the outside.

Reulos, Goudeau & Co. of Paris, in the year 1900, put an amateur apparatus on the market. It was called "Mirograph." The film for it had a width of 21 mm. and no perforations. Instead it was cut out on the edges as shown in Fig. 6. Seen from the outside it looked like the first ones made by Gaumont and Appleton. The apparatus cost \$50 and the projection lamp-house \$16 extra. In those days gaslight was used for projection, and with it the "Mirograph" would produce pictures of at least 3 feet wide. With arc-light, pictures of about 12 feet in width could be obtained. The same firm also manufactured a viewing apparatus called "Mirooskop." The firm of L. Gaumont & Co., of Paris, which is known all over the world, could not disregard the amateur film situation and put its "Pocket-Chrono" on the market. The film had a width of 15 mm. and was perforated in the center. Its movement consisted of the beater designed by Demeny whose patents were exploited by Gaumont.



New Method Revives Interest in Disc Recording

Continued from Page 8

acteristics of the reproducers. The surface noise arises from a random distribution of impulsive shocks caused by small irregularities in the surface of the record. These produce noise of their own which is the surface noise proper but in addition they start resonant vibrations in the reproducer that have resonant frequencies within the range of reproduction. In the new vertical type reproducer all such resonances have been successfully eliminated by careful design. As a result surface noise, as shown in Figure 2 slowly increases with frequency without showing any peaks which would exist if there were resonating parts on the reproducer.

"Further studies of vertical recording naturally brought into consideration the plating operation. The usual methods of graphiting or brushing the wax with electrically conducting powders have been found to be unsatisfactory and the cause of a considerable amount of noise in the finished record. The most satisfactory method has been found to be one of the earlier methods used in the phonograph field, namely, cathode sputtering of the wax. With this technique, however, heat is developed and it has been found necessary to keep the wax cool during the sputtering operations. This difficulty has been taken care of by the use of a very thin layer of wax flowed on a metal surface which can be kept from becoming sufficiently warm during the sputtering operation to cause damage to the recently cut wax. By using a thinly flowed wax it is possible to obtain a surface texture which is extremely smooth and homogeneous and which is free from the mechanical strains incident to shaving the waxes by the methods now commonly in use. This thin layer of wax is sputtered with an extremely uniform, smooth and tenacious surface of metal within a very few minutes. The sputtered wax may then be inserted in the plating tank and the usual plating operations followed.

"It has been common practice to provide duplicate stampers by electro-plating the first stamper or master to

obtain a negative metal record. This master in turn has been plated to provide a duplicate stamper. A convenient and quick alternative method has been provided by sputtering and plating a suitable pressing made directly from the original master. All of these improvements tend to decrease surface noise, the reduction being of the order of 25 to 35 db. The volume or dynamic range of recorded sound is usually considered to be the difference in decibels between the loudness of the surface noise and the loudness of the maximum recorded sound which the record can accommodate with faithful reproduction. With lateral records of the past this volume range has been stated as about 25 to 30 db. With vertical recording the reductions in surface noise described above increase the volume range to from 50 to 65 db.

"By a combination of the various steps mentioned above, it has been found possible to record fifteen minutes on a 12-in. record and ten minutes on a 10-in. record. This involves the use of about 200 grooves per inch and a recording level about equal to the recording level employed in lateral recording when 100 grooves per inch are used. Under these conditions the new technique, because of this greatly increased signal to noise ratio, gives records which for many recorded subjects are actually noiseless. The tonal quality obtainable is well comparable with the best film recording, while the volume-range possible considerably exceeds anything at present obtainable on film. A number of technical and commercial advantages in comparison with existing disc processes are likewise evident. Over-cutting and breakage of grooves are virtually impossible with vertical-cut records, while the cellulose-acetate base is practically impervious to breakage, heat, or water.

"While it is too early to predict just what uses will be made of this method of recording in the motion picture industry, it is felt that the method holds great promise and as further experience is gained several uses will be found for this method. At present it is being used to a large extent in recording electrical transcriptions for the broadcasting stations. Some consideration has been given to using this method as a library of sound effects and music which can be used in re-recording. Experiments to date indicate that re-recording from the vertical cut record to the film can be accomplished very successfully and without the usual losses which occur when re-recording is done from film to film. It is expected the ingenuity of the personnel in the motion picture industry will devise profitable uses for this interesting recording method."



Why I Choose Cinematographers as Directors

Continued from Page 11

While he, as a cinematographer, is attending to his camera, the director is dealing with the dramatic.

If the cinematographer does not know what the director is doing, if he is unable to comprehend the dramatic highlights of a motion picture, he will never become a director. This statement has been proved amply in the industry again and again. Cinematographers elevated to the rank of directors have turned in, time and time again, photographically perfect pictures which slide and gloss over the dramatic moments and leave the audience absolutely cold. I know of one case recently where a cinematographer-director in a major studio was given an excellent cast and a fine story and proceeded to turn out an absolutely flat motion picture. It was necessary to assign another director and re-take every dramatic scene in the picture.

My interest, of course, in promoting cinematographers to be directors is a more or less selfish one. I know that when a skilled camera man is given a directorship, so to speak, he will cooperate with the man at the camera and will understand his problems far better than a director who has risen to a directorship through other channels. I know that I will get a picture which will be pictorially perfect.

I know, too, that every player in the cast will be given a photographic "break" and that every favorable feature of that player will register on the screen at the preview. I know, too, that every background will be given a full play and that none of the production value will be lost through faulty camera work.

The only thing which worries me is whether the cinematographer—better, the ex-cinematographer—will exercise the creative ability which he must have to become successful and to make the company, in turn, successful. This rests entirely with the individual.

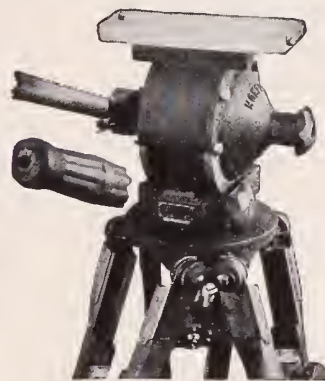
In closing I wish to call the attention of every cinematographer to the fact that he is "on the spot." He is in a position to advance himself.

He has the shortest distance to go of any man in the industry. If he will give his attention to turning out good work as a cinematographer and at the same time look ahead of him and study the work of the director and of everyone else on the set, he will be fitted for the new job which, in time, is bound to come to him.

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Construction of a Practical Densitometer

Continued from Page 18

wedge (see Fig. 18). To facilitate turning, the wedge projects $\frac{1}{8}$ inch from under the instrument cover.

The beam of light after passing through the wedge falls upon the opal glass H. The photographic image to be measured is laid on this diffusing screen. The opal glass also acts as an illuminator for the detection of the spot to be measured.

A second beam of light coming from the lamp is led around by the two mirrors, B and D, to the photometric head. This head consists of a plane glass F set at an angle of 45 degrees, so arranged that the light from the mirror system is reflected to the base of the head. The two surfaces of the plane glass reflect sufficient light (about 10 percent) to furnish the comparison beam. In order to insure a uniform patch of light, a piece of opal glass C is placed between the mirror B and D, and a piece of ground glass E between D and F. In the base is a circular piece of plane silver mirror G with its silver side nearest the opal glass H. In the center of the mirror the silver is removed over an area of $\frac{1}{2}$ mm. in diameter.

The observer sees in the eyepiece J a spot illuminated by the opal H, surrounded by a comparison field illuminated from the mirrors B, D, and F. The eyepiece contains a suitable magnifier.

In order to make the dividing line in the photometric field become entirely invisible when the two parts of the field are balanced, the mirror G is thinly silvered and thinly varnished. The silver is removed from the center of the

mirror by covering the silver side with a template having a hole of the desired area ($\frac{1}{2}$ sq. mm.) and scratching away the silver with a brass needle. The silver surface is protected from the atmosphere and from scratching by cementing with Canada Balsam a micro-cover glass onto the mirror. In order to prevent scattered light from entering the photometric field when a small dense spot is surrounded by a large light area, and also to act as a bumper, a thin sheet of dull black paper is pasted over the cover glass.

In the center of the black paper a hole is cut slightly larger than the hole in the silver surface of the mirror. As the density to be measured is never in perfect optical contact with the mirror, the size of this hole is a factor in determining the minimum size of the spot which can be measured.

The instrument was calibrated by carefully measuring on the Capstaff-Green densitometer the densities of a series of neutral gray gelatin films. After finding with each of these densities the position of the wedge which enables the field to be balanced, the values were marked on the wedge itself, a suitable window being provided on the top of the instrument case.

The measured films increased in density by 0.1; the intermediate graduation divisions were interpolated. As the wedge throughout the greater part of its length increased uniformly in density, the graduation divisions were consequently uniform over this range. The need for extreme care in the calibration of the wedge should be emphasized, as it is essentially the element upon which the precision of the instrument depends.

To make measurements: the photometric balance is first

7 Interchangeable Lenses

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(Left) **GLENN R. KERSHNER**, Cinematographer with the Macmillan and other Expeditions, who uses the LEICA for "stills" in his moving picture work, says: "The LEICA will give you pictures at all kinds of speeds from time exposures to five-hundredths of a second with the assurance that one will never spoil a prize shot by a double exposure for it can't be done."

(Center) **JACKSON ROSE**, Universal Pictures cinematographer says: "I had a difficult time convincing photographic experts that these remarkably brilliant prints (11 x 14 inches) were enlarged from Leica negatives. It was not until I displayed the 1 by $1\frac{1}{2}$ inch originals they were convinced."

(Right) "CANDID" CAMERA SHOT of William Seiter, director, and Arthur Miller, camera man, made by C. W. Slifer. LEICA'S small size and the ease with which it can be concealed, makes it ideal for getting unposed pictures.



adjusted at the zero position by slightly moving the lamp to or fro by means of the thumb screw K. After once determining the zero position, it is only rarely that the lamp distance needs to be altered. The density to be measured is then placed in contact with the opal, and the photometric balance is reestablished by rotating the wedge.

The performance of the instrument was tested by measuring a number of uniform densities separately and then in pairs. It was found that the superimposed pairs agree within 0.02 of the arithmetical sum of the single densities. Similar agreement was found when three pairs of densities were superimposed. A further test was made by exposing a photographic plate under these neutral dye densities and giving exposures through the various pieces as indicated by the measured values, so that the developed plate would have a uniform density if the measurements were correct. Several trials were made, and in each case it was found that the measured density corresponded to within 0.02 of the printing density.



Industry Endorses A.S.C. Proposed Testing Plan

Continued from Page 5

fidence in the equipment he uses. We shall be glad to cooperate in any way possible."

As an indication of the reaction of the amateur movie maker to this plan, the opinion of Glenn Steel Bowstead, president of the Chicago Cinema Club incorporates the viewpoint of the many amateurs who have enthusiastically responded to this move of the American Society of Cinematographers. "I was very much pleased to read in the October issue of the American Cinematographer," said Mr. Bowstead, "that the future policy of that publication will incorporate a much larger space devoted to the amateur movie activities. I was also very much taken with the first article wherein the future policy of the Cinematographer Association is to include testing of apparatus appertaining to amateur movie work. I cannot help but feel that this will be a big step forward in assisting amateurs in analyzing the claims made by manufacturers and dealers which they would not otherwise be in a position to do."

A great interest was evinced among the dealers who are anxious to have the benefits the approvals will mean to them in the sale of their product.

Having as its aim the constructive advancement of cinematography and allied technical activities as outlined on page 5 of this issue, the American Society of Cinematographers enters this plan of testing after much deliberation so that it might render the full service that is expected of it.



Bell & Howell's Publication, Filmo Topics, Out

ANNOUNCEMENT of the contents of Bell & Howell's publication Filmo Topics for October and November would indicate a very interesting issue of this publication.

Included in the contents are such feature articles as: "Behind the Mirror," a successful birthday party film inspired by "Alice in Wonderland," authored by Harvey F. Morris; "Exploring the Western Arctic" by Richard Finnie, is an account of the author's one-man expedition for the Canadian Government. "Let's Edit Those Summer Films"

submits some ideas on how random shots can be made into interesting movies, and an explanation of the mechanics of film editing. This edition also has its feature "Filmo News Pictorial," also "Among Eclipse Records," as well as a comprehensive article on the 16 mm. in industry as employed by the Caterpillar Tractor Co. Of interest to a great many will be suggestions under the self explanatory heading "Movie Makers' Christmas Cards." Then, of course, the ever interesting Questions and Answers.

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Screen World Is Controlled By Electricity

MOTION pictures and electricity, twin products of Thomas A. Edison's wizardry, are inseparably linked.

The film industry is becoming more completely electrified with every day's passing—even in the smallest details of work.

The human mind creates stories and guides their transcription to the screen. But from this point on, electricity plays a vital part.

At the Paramount studios a study of the expansion of electricity into almost every phase of film work is easily made under the expert tutelage of Earl O. Miller, chief electrician.

"Night After Night," featuring George Raft, Constance Cummings, Wynne Gibson, Mae West and Alison Skipworth, furnishes an excellent example to chart the study of the electrifying of film processes.

The mill, where sets are made, is electrically operated throughout. An electrically-powered machine shop makes metal fixtures. A small electric truck carries loads of big lights for illumination while an electric hoist takes some to platforms above the set.

Even the players do not escape the touch of electricity.

Waves and curls are placed in actresses' hair by electric curling irons. Electric sewing machines in the wardrobe department make their costumes and electric irons keep them pressed.

Electricity lights the huge set at the touch of a single switch. Two-ton stage doors slide into place by electricity. Camera motors and the machinery of the sound recording rooms are operated and synchronized electrically.

In the laboratory, the negative and positive prints are developed, dried and polished by electricity.

In the cutting rooms, the numerous individual pieces of film become one on an electric splicing machine. The editor watches and listens to the film on an electric Movie-ola, a miniature exhibition machine.

And, finally, in the theatre, the film is run on electrically-operated projection machines and the sound reproduced through electric amplifiers.



Wheels of Industry

Continued from Page 22

hazard of overloading. This model also embraces a new rack-and-pinion tilting device and an automatic pilot which turns when the projection lamp is extinguished.

The Victor Universal Hi-Power Model 10RH is identical to the Premier Hi-Power except for the lamp resistance. The built-in universal resistance of the 10RH is of the variable rheostat type and is equipped with separate motor for forced cooling and with ammeter and variable resistance control.

This equipment accommodates all of the regular and high intensity lamps up to 7 amperes rating. For maximum illumination, the powerful 165 watt-30 volt lamp is supplied by Victor as standard but the user may substitute the hundred volt 400 watt, 375 watt-75 volt or any of the lamps of line voltage ratings if he so desires. The advantage of the 165 watt-30 volt lamp is its low cost compared to the prices of other high intensity lamps.



Nominees for Academy Camera Awards

Included in the nominations of the Academy of Motion Picture Arts and Sciences for distinguished achievements in cinematography in their fifth annual awards which will be voted upon this month are Karl Struss, A.S.C., Ray June, A.S.C. and Lee Garmes.

Recognized as one of the industry's leading cameraman, and especially noted for his artistry with the new "low lighting" method of photography Lee Garmes was chosen as one of the nominations for an Academy award this year. Garmes has been devoted to photography since he was a mere boy. He was a cameraman's helper at the age of thirteen. Before that time he had been experimenting and studying photography with a small box camera, shooting the pictures and afterwards developing and making his prints himself.

He photographed two reel comedies and later graduated to features with the filming of "The Grand Duchess and the Waiter." This work won him an assignment to accompany Rex Ingram to France to photograph the "Garden of Allah." Garmes has been responsible for the camera work on many of Hollywood's most interesting pictures, among them being "Morocco," "An American Tragedy," "City Streets," "Dishonored," "Fighting Caravans," "Whoopie," and "Lilies of the Field."

Coming through with a second signal recognition of the so-called school of realistic photography, Karl Struss, A. S. C., again won nomination for his outstanding cinematography, this year for his work behind the camera on "Dr Jekyll and Mr. Hyde." The first Academy recognition of his craftsmanship was for the photography, in asso-

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ciation with Charles Rosher, on the F. W. Murnau production of "Sunrise," in 1927-28.

Struss is not only recognized as one of the industry's leading cinematographers, but is also an expert in the field of "still" photography, having had his camera studies exhibited all over the world and winning many awards and honors for their excellence.

He has been studying photography all of his life and has been peculiarly successful in obtaining a beauty and realism which is attained by few cinematographers.

In addition to "Dr. Jekyll and Mr. Hyde," Struss has photographed "Skippy," "Murder by the Clock," "Abraham Lincoln," "Kiki," "Two Kinds of Women," and has just completed the DeMille production of "Sign of the Cross."

Ray June, A.S.C., chief cameraman on the Samuel Goldwyn production, "Arrowsmith," one of the pictures nominated to the Academy's awards for the best picture of 1931-32, is himself an awards nominee because fellow cinematographers selected his work on "Arrowsmith" as worthy of going on the ballot for the award for best cinematography.

Born in Ithica, New York, June attended Cornell University, served as a photographer for the U. S. Signal Corps during the World War and for a time was instructor in motion picture photography at Columbia University. He then entered the motion picture production industry. During the past two years he has filmed nine pictures. His most successful work has been on "Alibi," "Putting on the Ritz," "Reaching for the Moon" and "Arrowsmith."

Robert B. Kurrle Mourned

THE MOTION PICTURE Industry lost one of its greatest cinematographers and finest gentlemen in the death of Robert B. Kurrle, who died at the Cedars of Lebanon Hospital in Hollywood, October twenty-seventh.

Mr. Kurrle had been an outstanding cinematographic artist for the past seventeen years, having photographed many noteworthy productions, including the Rockett Bros.' "Abraham Lincoln," Edwin Carewe's "Ramona," "Evangeline," "Resurrection" (both silent and sound versions) and, during the past two years, a number of equally notable productions for Warner Bros.-First National.

He was one of the earliest members of the American Society of Cinematographers, and one of the best-liked members of the camera profession. His passing leaves a place in the industry and in the hearts of his fellow-workers which can never be filled.

"Window Wall" New Invention In Movie Sets

THE latest invention in motion picture settings is being put into effect by the Paramount studios.

One elaborate set for Ernst Lubitsch's "Trouble in Paradise" is equipped with walls which raise and lower like gigantic windows.

Huge wall sections are slotted and can be raised out of the way in less than a minute. The "window wall" speeds up the work of lighting a set for it gives more room for the lights and enables cameraman Victor Milner, A. S. C., to place his camera almost anywhere.

Players are less hampered for space, also. First to work under these new conditions are Miriam Hopkins, Kay Francis, Herbert Marshall, Charlie Ruggles and Edward Everett Horton.

Another recent development in set construction is the

"open-book" set in which adjoining walls can be opened like a book to a wide obtuse angle in order to give the staff more room for movement and lights.



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Wampas to Make Award For Best Publicity Stills

FOR THE PURPOSE of "bettering motion picture publicity, advertising and still photography," plans for the presentation of a series of annual awards of merit for these three phases of showmanship were drawn up at the organization rejuvenation meeting of the Wampas, held at the Writer's Club last night. At the next gathering of the publicity men, committees will be appointed to settle the details of the awards plan, which, if present plans go through, will embrace the work of theatres everywhere in the United States and the efforts of New York and Hollywood publicity and advertising departments.

A contemplated schedule of business activity was discussed and will be decided upon definitely at the forthcoming meeting. The program includes a series of progressive steps which it is hoped will bring about a better cooperation and understanding between producer and publicity man.

The "rejuvenation program" was compiled by a committee composed of Tom Bailey of Paramount, chairman, John LeRoy Johnston of Universal, and George Thomas of Warner Brothers-First National, and approved by publicists of all studios.



Production on Increase in Germany

WHILE only 13 of the 28 studios in Germany were working during June, the latter part of July and August found the majority of the studios operating.

This activity in German production is taking place in spite of the poor business at the box office as it is the feeling of the producers and distributors that the political change will have a tendency of showing an upward curve in business.

It is claimed that considerable of the finance for these new pictures is being furnished by some of the leading distributors as it is their belief that better pictures right now will advance Germany's position in the international film trade.



Government Releases Film on Sheep

THE U. S. Department of Agriculture has just released a new film on "Approved Sheep Management in National Forests." Filmed amid the mountains of Montana and California, this film is naturally highly pictorial, while serving its purpose of portraying the every-day life and duties of a sheep-herder, and showing various approved methods of sheep-herding, such as the use of pack-animals for moving the camp outfit with the sheep, assuring fresh feed and clean bed grounds daily.

The film is as yet available only in the 35mm. size, silent, and will be supplied to responsible borrowers on application to the Office of Motion Pictures, U. S. Department of Agriculture, Washington, D. C.



Technical Experts Thrive On New Universal Sets

TECHNICAL directors are falling over each other at Universal City these days, during the filming of Tala Birell's first starring vehicle, "Nagana," a story of Africa.

Ernst L. Frank is directing the dramatic action of the picture, and James Light is dialogue director. Correctness of the African details is under the supervision of Sir Gerald Grove, who lived in the Dark Continent for many years, and the supercargo on wild animal sequence is Charles Murphy, formerly in charge of the Universal zoo. Technical supervision of scenes detailing the fight of science against sleeping sickness is in the hands of Mrs. Winifred Russell, chief technician of a local clinical laboratory.



New Trichrome Process Invented

M. LUCIEN ROUX, a French scientist from l'Institut M. d'Optique, has patented a process that, if it is to be judged by its first results, bids fair to solve the problem of the trichrome picture.

The system consists of the employment of very small photographs, to the number of three in a space of 19x22mm. If desired a fourth photograph may be used which would permit a system of tetrachrome, that of the four fundamental colors. Perfect shades can be obtained, it is claimed.

The apparatus consists of a special triple objective giving three small but perfect pictures, differently colored, by three glasses—violet, orange and green. The projection apparatus objective is quadruple. The winding of the film can be done on an ordinary projection machine.



Jimmie Howe to Europe

HAVING COMPLETED the camerawork on Erich von Stroheim's production, "Walking Down Broadway," James Wong Howe is leaving for Europe, to combine a much-needed vacation with the making of background shots in England, France, Germany, Italy and other locations for forthcoming Fox productions.



Freund Finishes First as Director

AFTER SEVEN WEEKS of intensive filming, Karl Freund, A. S. C., has finished the direction of Universal's thriller, "The Mummy," which marks the debuts of Freund as a director and Karloff as a star. Charles Stumar, A. S. C., was the cinematographer.



Sound Effects Fading Out

IN LESS THAN A YEAR artificial sound effects will be obsolete according to a statement made by Murray Spivack, RKO supervisor of sound.

"Artificial sound effects have met their doom in the rapid strides made in recording," said Spivack. "We are now able to record actual sound effects in almost every instance. At present only 25 per cent of the sound effects on hand at RKO studios are in use. The remainder are lying idle and will remain that way."

Estonia Increasing Sound Equipment

It is estimated that 33 of the 82 picture theatres in Estonia are wired for sound. According to plans in that country twelve more houses will go in for talkies this year.

The sound on film reproduction equipment in use at present in Estonia theatres varies in its source. Gravor, Zeiss-Ikon, Klangfilm, Bauer, Selenophone and a few American makes comprise the type being purchased.

German manufacturers have thus far been leading suppliers for sound apparatus.

Picture apparatus is included in the list of so-called monopolized commodities by the government.



Sound Pictures on Increase in India

Of the six film companies in Bombay which produce talking motion pictures five of them use American sound recording units. It is expected according to reports that the other local motion picture producers will probably start the production of talking pictures soon. The main difficulty in selling recording units is said to be due to the financial condition of most of the companies.

The majority of the Indian producers have only a small capital and not much equipment. In producing silent pictures, the cameras are the chief item of equipment. The majority of the producers do not have any lights.

The companies producing talking pictures at Bombay do not have soundproof studios but work only late at night when the city is comparatively quiet. Lights are, of course, used by these companies.

The laboratory equipment of the producers is said not to be adequate. There are some small laboratories which work

for those companies which do not have their own laboratories. It is claimed according to reports that the development of the film in most instances is not well done.



Adolph Lomb Dies At Age of 66

ADOLPH Lomb, vice-president of the Bausch & Lomb Optical Company, died at his home in Pittsford, N. Y., a suburb of Rochester, on Sept. 30th, after a brief illness. He was 66 years old.

Mr. Lomb, the eldest son of Capt. Henry Lomb, the co-founder of the Bausch & Lomb Optical Co., had been connected with the optical institution established by his father and John Jacob Bausch for 53 years. He entered the company when a young lad of 14, leaving temporarily to continue his university studies.

Besides being an executive of the Bausch & Lomb Company Mr. Lomb was identified with a number of scientific and patriotic societies, chief among which was the Optical Society of America. Mr. Lomb had been treasurer of that organization since its inception and one of its most beneficent financial supporters.

Carrying on a work instituted by his father, Mr. Lomb was interested in the welfare and activities of Civil War Veterans and the Sons of Civil War Veterans. He was a trustee of the Henry Lomb Camp, Sons of Union Veterans.

He was born in Rochester in 1866; was a graduate of the University of Rochester, Class of 1892, and had also taken advanced work at the Massachusetts Institute of Technology and the University of Berlin, Germany.

He leaves his mother, Mrs. Emilie Klein Lomb, widow of Capt. Henry Lomb, a brother, Henry C. Lomb of New York City; a nephew and two nieces. Mr. Lomb was unmarried.

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Among the many scientists and educators who sent messages of condolence to members of Mr. Lomb's family or to his fellow executives in the company, were, Dr. Nicholas Murray Butler, president of Columbia University, New York City; Dr. E. C. Crittenden of the United States Bureau of Standards at Washington; Dr. F. K. Richtmyer, Professor at Cornell University and editor of the "Journal of the Optical Society of America"; M. J. Julian, director of the Better Vision Institute, of New York City; and Dr. James D. Southall of Columbia University.

Huse Elected Chairman S.M.P.E.

EMERY HUSE, A.S.C., and Technical Editor of The American Cinematographer, on Tuesday night, October 26th was elected to the chairmanship of the Pacific Coast Section of Motion Picture Engineers.

Huse is the West Coast manager of the motion picture department of the Eastman Kodak Company. He has long been an active member of both the American Society of Cinematographers and the Society of Motion Picture Engineers and is considered one of the foremost authorities in the industry on laboratory methods, and principles.

Huse, as chairman of the Pacific Coast section of the Society of Motion Picture Engineers, succeeds Dr. Donald Mackenzie.

Academy Recognizes Shorts

SHORT SUBJECTS, which rival the longer feature films for popularity with motion picture patrons, will be given appropriate recognition for the first time in the annual awards of the Academy of Motion Picture Arts and Sciences this year.

From more than 50 short films, which have been submitted by seventeen companies, three pictures will be chosen to receive certificates of honor at the Academy's annual awards banquet in November.

The short subjects have been divided into three groups for awards consideration: 1, mechanical or animation; 2, comedies; 3, novelties, including all educational, news, travel, animal and scenic films.

The pictures submitted will be screened during October 24-26 before a committee of fifteen members of the Academy, who are engaged in the production of short subjects. The committee has been divided into groups of five, each group to vote on a type of film in which its members are not interested. The nomination groups are:

Comedies: Walter Disney, Leon Schlessinger, Sol Lesser, Jack Cummings, Walter Futter.

Animations: Louis Brock, Warren Doane, Stan Laurel, Mack Sennett, E. H. Allen.

Novelties: Arthur Ripley, Roy Disney, Oliver Hardy, Henry Ginsberg, Charles Christie.

Three subjects chosen in each class then will be put before the committee and the executive secretary of the Academy for a final elimination vote.

The Magic Carpet of Movietone

WE HAVE SEEN a number of these interesting short subjects at different times. Since the photography in them is almost always far above the standard of the average travel shorts, and especially because they evidence a real appreciation of dramatic cinematography, direction and cutting, it is a crying injustice that the cinematographers who make them are not given the screen credit that they deserve.

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Keeping Cameras Running

Continued from Page 9

cialization that is necessary in the efficient making of cameras. Movement repairs are entrusted only to mechanics who have specialized in the assembly and repair of movements for years. Lens and optical adjustments are handled solely by trained optical workers. Camera-body repairs are detailed only to specialists in this phase. Assembly and dis-assembly are similarly specialized, as is every phase throughout the list.

The entire question of keeping studio cameras operating perfectly therefore simmers down to perfection of servicing, perfection of adjustment, and perfection of the rare major repairs. Many of the factors that enter into each phase of the problem appear trifling; but "trifles make perfection—and perfection is no trifle." In these days of studio-owned cameras, the budget allotted to maintenance of the camera equipment can at best be only a small fraction of the cost of the studio's output; but if this trifle is neglected, its results will quickly be felt along the whole line of production, in both damage to the completed product, and increased cost due to lost time, retakes and the like. And in these trying days more than ever, the economy that counts is the economy that is felt in the long run.



New Polish Sound Film Studio

The first serious attempt to equip and operate an authentic type of sound-recording studio in Poland is now nearing completion. Several experiments have been tried with "bootleg" equipment, but they have not given much satisfaction.

The latest type of sound-reproduction equipment is now being installed at the D'Alben Studio, Ul. Wolska 42, Warsaw, by Tobis Klangfilm of Berlin. The announcement is made in this connection that Tobis Klangfilm now operates under a patent exchange agreement with American electric firms and that in the distribution of markets Poland is assigned to Klangfilm.

The new D'Alben Studio is expected to be in operation within a week or two. Its first production will be "The Moving Palace," a sound film based on the Kosowski novel, which Richard Ordynski will direct for the Orton Company—of which Mr. Ordynski is also the managing director.



Australian Newsreels to Combine

According to an announcement from the managing director of Cinesound Productions, Ltd., Sydney, producers of the Cinesound Review, that company has absorbed the Herald Newsreel produced by the Herald & Weekly Times, Ltd., of Melbourne. In the future the newsreel will be known in Victoria as the Herald Cinesound Review, but will continue to be known as the Cinesound Review in New South Wales and Queensland.

Cinesound Productions, Ltd., will have complete control and will acquire the plant of Australian Sound Films Pty., Ltd., the subsidiary which controlled the Herald Newsreel. The Melbourne Herald, however, will continue to use its publicity power for the benefit of the combined newsreel.

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Editors Join Academy

MOTION picture film editors, who are members of the technicians branch of the Academy of Motion Picture Arts and Sciences, plan to organize a film editors section within the Academy to deal with the specialized activities of their craft.

I. James Wilkinson, film editor representative on the technicians branch executive committee, presided at a section organization meeting of leading film editors at the Academy offices.

The Academy technicians branch now has three sections: Sound, Photographic and Art Directors.



Reorganization of Russian Film Industry

Sowkino, the Soviet State film organization, which monopolizes production and distribution in Russia, is to be reorganized according to Governmental instructions, reports American Trade Commissioner George R. Canty, Berlin. Russian film production will henceforth be handled by the following trusts: Rus-Film, Bel-Film, Ukrain-Film, and Wostok-Film. A special trust will be in charge of film constructions, and another one, entitled "Tech-Film" of educational and cultural films and also newsreels. It is promised to produce 60 long editorials and 100 shorts in 1932-33.



Air Line Shows Films to Promote Travel

United Air Lines are using motion pictures for promoting interest in air travel. A 16 mm. 800 foot film, "Across America in Twenty-seven Hours," is being shown by the Air Lines' traffic representatives before luncheon clubs, business men's organizations, women's clubs, colleges, and high schools. Ten Bell & Howell Filmo projectors are being used for presenting the movies in various parts of the country.

The film consists of a pictorial narrative of a flight from California to New York and includes views of planes flying over scenic and historic country, particularly the western mountain areas. There are shots of a big tri-motored transport with a background of the Rockies and the Sierras, and aerial views of fourteen cities flown over on this 2700-mile flight from the Golden Gate to the Statue of Liberty.

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Thru the Lens of the Critic

Continued from Page 13

could and should have been an outstanding example of cinematography. Instead, its treatment is constantly wavering between the mood of "Shanghai Express" and that of "The American Tragedy." Had either treatment been consistently maintained, the film would have been excellent; as it is, it is neither fish, flesh nor fowl. When I saw the picture, it was over 2,000 feet too long; since then, I understand, it has been cut down and the remains patched together with a series of the exaggeratedly long lap-dissolves that gave Herr von Sternberg such pleasure in "Dis-honored." I hope that Glennon's present engagement at RKO will give him a better opportunity to do the really fine work of which he is capable.

"MEN ARE SUCH FOOLS"

photographed by **Charles Schoenbaum, A. S. C.**

THIS production shows how valuable a good cameraman can be to the independent producer working on a moderate budget. Charles Schoenbaum's photography is quite the best thing about the picture, adding much-needed richness, and production value to a high degree. He has photographed the principals very well, and used excellent taste in his treatment of the prison scenes. There is some unusual optical photomontage work in the sequence wherein Leo Carillo learns that his wife has betrayed him. The direction is very poor, and the atmosphere of the opening sequence, which is laid in Vienna, is not in the least convincing. By all odds, Schoenbaum's photography is the best thing in the picture.

"RAIN."

photographed by **Oliver T. Marsh, A. S. C.**

IN THIS production, Oliver Marsh's cinematography shines forth like a lighthouse at midnight. He really rises to great heights in "Rain"—the more so because he has almost completely abandoned his normal style of work. "Rain" is not, photographically speaking, characteristic of Oliver Marsh; but it is extremely characteristic of Somerset Maugham's story. In addition, the photography is technically superb. Two such pictures as "Rain" and "Faithless" coming in succession from Marsh's camera are a high tribute in themselves to his artistry and versatility.

The chief criticisms of "Rain" must be aimed at Director Lewis Milestone. Normally, "Milly" has an acute sense for cinematics, but in this instance he has managed to go far astray. Aside, of course, from the orgy of miscasting—with which this department is not concerned—"Milly" has apparently gone out of his way to abuse the camera. The earlier sequences of the picture are saturated with moving-shots. "Milly" is sufficiently the cinema craftsman to know that an excess of perambulation is not great directing; the "Front Page" proved that; but in "Rain," con-

fronted by almost the same problem that arose in "The Front Page," that is, a relatively small set in which practically all of the action must occur, Milestone has run amuck with his perambulator.

The United Artists studio heads, too, should have been wiser than they proved themselves to be. All of the dailies on "Rain" were developed in the studio laboratory to which Marsh was accustomed—but the release print used for the World Premiere was produced by a commercial laboratory which had never seen the negative before. Perhaps, though, they were generously trying to bring the photography down to the level of the rest of the production.

"THE BIG BROADCAST"

photographed by **George Folsey, A. S. C.**

THIS ONE SHOWS the difference between New York and Hollywood production. George Folsey has done some reasonably effective work in Paramount's New York Studio, but nothing comparable with the best parts of this, his first Hollywood-made film. The photographic and directorial treatment of the first half of the film is excellent; but as the Big Broadcast itself begins to go on the air, both director and cameraman have to take a back seat while the radio favorites strut their stuff *ad nauseam*. Many of these scenes were made, perforce, in New York, and in them the technical quality is marked by inferior to that of the Hollywood-made portions. The treatment of the suicide sequence is outstanding in conception and execution; it is quite the high spot of the picture.

"RACKETY RAX"

photographed by **L. William O'Connell, A. S. C.**

VERY good, high-key photography in a story which does not permit a great deal in the way of pictorialism. The treatment throughout is excellent, and there are a number of little tricks, such as showing a closeup of a football programme and then panning up from it to a long-shot of the crowds entering the stadium, which may well be used by the amateur. The sets for this picture, described by their designer, Gordon Wiles, in a recent article in this magazine, are notable for the production value achieved with relatively small and inexpensive sets. The lighting of the night-club dance numbers must be criticised, as it is very badly over-lit. Aside from this, however, O'Connell has done well.

SHERLOCK HOLMES

photographed by **George Barnes.**

THIS PICTURE exhibits more of George Barnes' consistently fine photography. Being a mystery story, the photography is in a low key throughout; excellently handled, and with a number of extremely interesting effect-lightings. The photo-dramatic moods are excellently sustained, and, despite the frequent effect-lighting of the sets, Barnes

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has not indulged in any extremes in creating either set lighting or in effect-lighting his characters. His treatment of the players, by the way, is excellent, and consistently natural.

Wm. K. Howard's directorial penchant for perambulation has been restrained very creditably in this production, but he repeats his device of trailing a length of gauze before the camera in some of the introduction transitions; coming so soon after his use of the same device in "The First Year," this seems rather poor taste, and detracts from Howard's undeniable originality. It is especially regrettable after the striking effectiveness of the opening shot of the picture.

The process work, of which there is quite a bit, naturally, is excellent.



"NIGHT AFTER NIGHT"

photographed by **Ernest Haller, A. S. C.**

THE photography of this picture is excellent, and though artistic, does not interfere with the progress of this swift-paced story. Haller's lighting shows the players off to good advantage, and is extremely natural throughout. Some of the night-effect interiors are especially noteworthy. The optical effects used to denote the passing of time are intriguing, though slightly over-done. In the early sequences there is a deal too much panning across empty sets, follow-shots of unimportant characters walking about, etc. On the other hand, the introduction of Constance Cummings, seated alone at a table in the speakeasy, calls loudly for a "zoom" shot which is missing. The manner in which the opening titles are tied in with the story shows considerably ingenuity, and provides a smoothly flowing opening.



"THE PHANTOM PRESIDENT"

photographed by **David Abel, A. S. C.**

process photography by **Farcot Edouart**

EXCELLENT commercial photography, which is all that could be asked of a story of this type. David Abel has made the camera deal far better with George M. Cohan than even Cohan in his most optimistic moments could have expected. The use of angle-shots in the convention sequence is interesting and effective, though possibly a bit drawn out. Cohan plays a dual role which is made possible by some of the finest and most intricate process photography seen in some time. Farcot Edouart deserves great credit for this, especially since Cohan's impatience forced much of this intricate work to be done under unusual pressure.

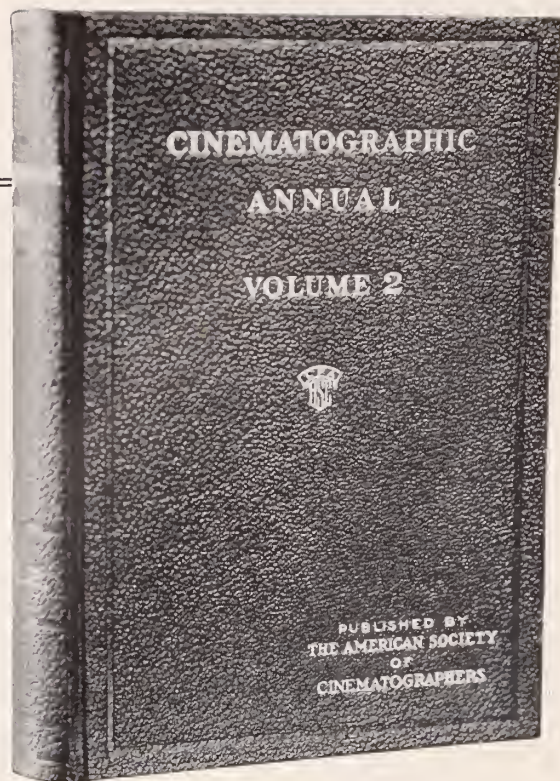


"LIEBE IST LIEBE"

photographed by **Gunther Rittau and Otto Baecker**

HERE is a German production which is photographed in the American manner, and photographed extremely well. The photographic quality is excellent, beautifully but not exaggeratedly soft, and the lighting throughout is natural, without exaggerated back-lighting, but with sufficient back-light to enhance the modelling. The exteriors are very well handled. Throughout, the moods are well sustained, but the picture shows that two different men made different parts of the film. The optical effects are quite good, and the several sequences portraying rhythmic movement according to the Lubitsch-Mamoulian-Rene Clair school are very interesting. The treatment of the time and place transitions are extremely clever, and could well be emulated by amateurs. In the earlier sequences there is rather too much dollying, and the opening sequence, establishing the leading man as a telegraph-clerk, shows the influence of Karl Freund's "Berlin" very strongly.

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New Film Shows How to Save Soil

"Save the Soil!" a 2-reel silent film, is a motion picture released recently by the U. S. Department of Agriculture. It presents the question of soil conservation as it concerns the farmer and the nation as a whole.

The film shows various ways of conserving soil fertility; terracing and cover-cropping to prevent erosion, rotation, the use of legumes to build up the nitrogen and humus content of the soil, the control of waste owing to fire, the use of manures, and of commercial fertilizers when necessary.

This film includes sequences showing the long pilgrimage the inhabitants of the Caucasus make each year in search of grass for their flocks, and scenes illustrating the Oklahoma "rush" of 1889.



Record Use of Electricity Is Set By Studio

All records for consumption of electrical energy by the Paramount studios were shattered during the past month. Employment of electricians broke all records since 1928.

With fourteen films before cameras the past month and heavy production slated for October and November, good times have returned for studio employees, according to Earl O. Miller, chief electrician at Paramount.

Electricians at work totaled 205 daily.

Electricity consumed reached the unprecedented figure of 746,000 kilowatt hours, topping all marks since Paramount first produced a motion picture in 1911. The monthly average is 225,000, with 350,000 the peak for 1931.

More than 100,000 kilowatt hours were burned on the settings of "A Farewell to Arms" which co-stars Helen Hayes and Gary Cooper. Cecil B. De Mille's "The Sign of the Cross" reached the new peak of 125,000 kilowatt hours in a single month.

At the studio, 586,300 kilowatt hours were consumed. Companies on location accounted for the 159,700 balance.



Technicians Form Society in India

UNDER THE title of the Motion Picture Society of India, the technicians, scientists and executives of that country have banded themselves into an association to promote a more scientific interest in the entire technique of motion pictures, both silent and talkie.

According to the announcement from the secretary of the Society this phase of the industry has not received a great deal of attention in India. The report also indicates that the movement is meeting with a fine response.

The president of the society is K. H. Vakil, Art and Dramatic Critic of the Bombay Chronicle and the secretary is K. S. Hirlekar, who is the Technical Advisor in India of the Agfa Photo Company. The vice-presidents are: A. Fazalbhoy and M. B. Patel. Dr. S. R. Mulgaokar is the treasurer.

The objects of the society as outlined in the constitution are sevenfold: To provide a meeting place for exchange of views of all interested; To provide a channel of communication with similar and allied associations in other countries; Arrange suitable technical lectures and demonstrations; To maintain a suitable experimental laboratory and library for the benefit of the members in particular and for the general public if possible; To investigate problems peculiar to the industry; To conduct an organ for the spread of knowledge regarding the latest information pertaining to the film and allied industries; To educate the general public in the utility of the film industry from a social, industrial and educational point of view.

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Even sand which is good enough for high grade plate glass is not good enough for MAZDA lamp bulbs. In the *one* place in the United States where sandstone of the proper purity can be obtained, the rock is quarried and crushed into sand, eliminating at the source the incidental impurities *always* present in native loose sand.

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GENERAL ELECTRIC

MAZDA LAMPS

THE AMERICAN SOCIETY OF CINEMATOGRAPHERS was founded in 1918 for the purpose of bringing into closer confederation and cooperation all those leaders in the cinematographic art and science whose aim is and ever will be to strive for pre-eminence in artistic perfection and technical mastery of this art and science. Its purpose is to further the artistic and scientific advancement of the cinema and its allied crafts through unceasing research and experimentation as well as through bringing the artists and the scientists of cinematography into more intimate fellowship. To this end, its membership is composed of the outstanding cinematographers of the world, with Associate and Honorary memberships bestowed upon those who, though not active cinematographers, are engaged none the less in kindred pursuits, and who have, by their achievements, contributed outstandingly to the progress of cinematography as an Art or as a Science. To further these lofty aims, and to fittingly chronicle the progress of cinematography, the Society's publication, The American Cinematographer, is dedicated.

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For Theatres up to 600 seats.

LEASE FOR CASH or DEFERRED PAYMENTS

The only all AC Operated Equipment for both large and small theatres.

NEW FEATURES OF STANDARD SUPER, LARGE and SMALL SIZES

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The finest movie gift is a FILMO PERSONAL MOVIE CAMERA AND PROJECTOR

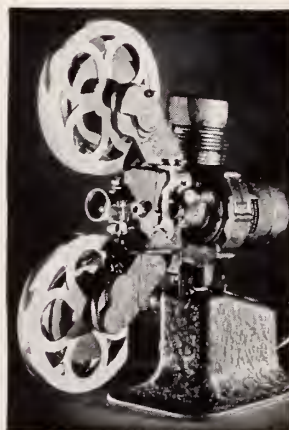
FILMO, the finest personal movie equipment, is the ideal gift. Our discriminating folk in the industry have high movie standards that *must* be met in their personal films. They also demand the versatility that they find in studio cameras—for personal movie subjects are too precious to lose just because conditions aren't ideal. So directors, stars, and cameramen invariably choose Filmo, and their choice is also that of kings, princes, sportsmen, explorers, scientists, and other knowing movie makers.

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The Filmo JL Projector, driven wholly by gears, is the outstanding accomplishment in the art of 16 mm. projection. Its powerful 400-watt illumination gives theater-quality pictures, and theater-size when required. It has an automatic power rewind, pilot light for easy threading, a novel tilting device, and a score of other refinements. With case, this projector is \$298. Other Filmo Projectors from \$135 up.

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PROFESSIONAL RESULTS WITH AMATEUR EASE

More Than 200 Compete for Amateur Prizes

COMPETING with more than 200 Contestants from all over the world William A. Palmer and Ernest W. Page of Palo Alto, California, were awarded the first prize of \$500 by the judges in the AMERICAN CINEMATOGRAPHER Amateur Movie Makers Contest when they selected the 3 reel picture "Tarzan Jr." for first honors.

The points on which all pictures were judged were photography, composition, direction, production technique, story, titles, editing, acting and entertainment value.

Based on these values Palmer and Page were awarded first prize. For the 3 reel subject "Tarzan Jr." All of the players in this picture were boys in a summer camp who upon discovering that one of their members has a movie camera decide to make a motion picture.

Like all youth they decide to imitate and based their story on Tarzan. The producers of this worked up a splendid bit of comedy, interjected a fine piece of melodrama with an Alger Jr. finish that rounded it out into a production that many of the judges felt would have been worthy of showing in any theatre. The acting, direction, story and handling as a whole was considered equal to many a professional comedy.

Second honors were given to Tatsuichi Okamoto of Japan for his 1 reel picture "Lullaby." Possibly the most outstanding features of Okamoto's work were his photography and composition. Many regarded his photography as the finest that had ever been put on motion picture film.

The third winner, S. W. Childs, Jr. caused much admiration for the novel way in which he handled his 1 reel picture "I'd Be Delighted To." The entire picture tells its story with hands and feet. His photography, all of which was interior, was rated very high.

Everyone is familiar with the fine work turned out by the Greenbrier Amateur Movie Club of White Sulphur Springs, W. Va. This club was given the fourth prize for their production "The Black Door," which has been honored in other contests conducted both here and abroad. This organization shows a fine sense of production values and an insight into what is required to build the proper suspense in motion picture entertainment.

More than six weeks were required by the members of the American Society of Cinematographers to go through the 300 pictures submitted in this contest to select the final dozen which were put into competition for the major prizes before the board of judges, announced last month, which consisted of directors, stars, writers, editors, newspaper critics and leading cameramen from the studios of

WINNERS

FIRST PRIZE . . . William A. Palmer and Ernest W. Page, Palo Alto, Calif., for "Tarzan Jr." 3 reels.

SECOND PRIZE . . . Tatsuichi Okamoto, Matsuyama, Japan, for "Lullaby." 1 reel.

THIRD PRIZE . . . S. W. Childs, Jr., New York City, for "I'd Be Delighted To!" 1 reel.

FOURTH PRIZE . . . Greenbrier Amateur Movie Club, White Sulphur Springs, W. Va. for "The Black Door." 3 reels.

WINNERS of Equipment Prizes will be announced in January issue. See page 37 for additional prizes.

Hollywood. This list of judges was announced in last month's issue of the AMERICAN CINEMATOGRAPHER.

With the addition of the prizes given during the past month by the Victor Animatograph Company and William J. German of the J. E. Brulatour Company (announcement of these will be found on page 37) it was impossible for the judges, because of the many entries to decide the winner of the equipment prizes.

These winners will be announced in the January issue of the AMERICAN CINEMATOGRAPHER, together with those who will receive Certificates of Merit for outstanding ability in certain phases of production.

The Certificates of Merit will be given contestants who showed high individual merit in different phases of picture making. Photography, composition and the other elements will be considered under these awards.

These Certificates will represent a very high honor to those who receive them as in many instances they indicate a greater achievement in that individual phase of motion picture making than was perhaps represented in the prize winning pictures in view of the fact that it was necessary to judge the prize winners from all nine points of picture making giving the honors to those who had the highest average for all points; whereas the certificates of merit will represent high achievement in individual phases.

Plans for the 1933 AMERICAN CINEMATOGRAPHER method of making awards will be announced in next issue. The plan to be used will be wider in its scope and cover a wider field of amateur activities. We might say now that this plan will be open to all bona fide amateurs whether they are subscribers to the AMERICAN CINEMATOGRAPHER or not.



THRU the LENS of the CRITIC

WITH the presentation of the 1932 Academy Award for Cinematography to Lee Garmes, the motion picture industry has fittingly acknowledged "Shanghai Express" as the year's finest example of photographic art. It is a richly deserved tribute to a true artist. Moreover, this year's award is truly representative of the opinion of the camera profession, for the nominations for the photographic award were made by the photographic section of the Academy, and were restricted solely to films made under normal production conditions in the studios—thereby barring films made under abnormal conditions in which the time and expense elements, so vital in regular production, did not figure. By all odds, the 1932 Photographic Award has been given under the fairest conditions yet attained. The only unfortunate circumstance is that there could be but one award rather than three, for each of the three nominees was of a calibre worthy of such recognition. "Shanghai Express," the winner, is perhaps the most perfect example of cinematic pictorialism that has been seen in many years, however, and is especially notable as an instance in which the art of the cinematographer has raised a story of distinctly routine proportions to the eminence of an outstanding picture.

Perhaps the best commentary on Garmes' achievement is the review of "Shanghai Express" which appeared in the AMERICAN CINEMATOGRAPHER in April, 1932. At that time we said: "Here is a film from Paramount which is deserving of mention as an example of perfect cinematography. Lee Garmes has achieved a notable quality of purely pictorial cinematography. Every scene is a gem of photography pictorialism—perfect in conception, composition, and cinematic execution. In addition there are several closeups of Marlene Dietrich which are literally breath-taking in their sheer beauty. They rank as the best individual scenes of many a year.

"The picture is well directed and excellently acted, but it is above all a cameraman's triumph, for it shows how far superb cinematography will go toward making a great picture out of an otherwise undistinguished story. Together with the photography, the sets and the manner of their dressing establish a remarkable atmospheric effect; long after the story and acting have passed from the viewer's mind, the atmosphere of China—not perhaps the China of fact, but the inscrutable and chaotic China we conjure in our minds after perusal of the latest war-bulletins—will remain."

Little more need be said about Garmes' achievement: he has produced a picture which will long remain as a high-water-mark of sheer cinematic beauty; one which has received the approval not alone of his fellow cinematographers, but of all of the representative artists, technicians and executives in the industry. We congratulate Lee Garmes, and the Academy as well, for having bestowed the award for so richly deserving an achievement.

OTHER ACADEMY AWARDS

The other 1932 Awards of the Academy were also well-

deserved. To the Technical Community, the most important awards, next to the Photographic Award already discussed are those for Recording, Art Direction, and Technical Achievement. The Sound Department of the Paramount Studio once more won the Award for the best recording. Unlike the majority of the other awards, this is for the best overall performance, and is judged solely by the sound technicians. The judges listen to scenes from five separate productions taken from the studio's programme, and make their decision through consideration solely of the technical excellence of the record. For the second successive year, the product of the Paramount Sound Department was adjudged the best by this exacting tribunal.

The Award for Art Direction went, most appropriately, to Gordon Wiles, well known as a contributor to the AMERICAN CINEMATOGRAPHER, for his brilliant work in designing the sets for "Transatlantic," which combined the realistic and the pictorial to a marked degree.

The Awards for Scientific Achievement went to Technicolor for the creation of the three-color Technicolor process now in use for Walt Disney's "Silly Symphony" cartoons, and to the Eastman Kodak Company for the perfection of their new sensitometer.

The other awards were: Best performance by an actress: Helen Hayes; by an actor Fredric March and Wallace Beery; Best Direction: Frank Borzage; Best Production: "Grand Hotel" M-G-M; best original story: Frances Marion; Best Adaptation: Edwin Burke; Best Novelty Short-subject: Mack Sennett; Best Comedy: Hal Roach—Laurel and Hardy; Best Cartoon: Walt Disney; Special Awards to Walt Disney for creating "Mickey Mouse."

"THE MUMMY"

directed by **Karl Freund, A.S.C.**

photographed by **Charles Stumar, A.S.C.**

With the direction of "The Mummy" starring Boris Karloff, Karl Freund, A.S.C., makes his debut as a director. We hope that every producer in Hollywood will see this picture, and learn what a great cinematographer can do as a director. For "The Mummy" is not like the average directorial debut: Freund exhibits a sure touch and a mastery of his medium that many a well-established director might envy. He tells his story effectively, intelligently, and artistically. Moreover, he reveals something which is all too lacking of late—especially in pictures of this type: dramatic good taste. He has not overstressed any element, either of horror or anything else, yet he has made the most of all of the eerie, spine-chilling elements provided in the story. Both dramatically and cinematically, Freund's touch is that of a master of his art. He has guided his players in presenting deft, positive characterizations with the minimum of effort, and in the minimum of footage. His cinematic treatment could not be improved upon; there are no superfluous scenes, nor angles, nor any superfluous movement of the camera. He has utilized the moving

Continued on Page 50



PRIZE CINEMATOGRAPHER

The greatest honor that can be bestowed upon any cinematographer was given Lee Garmes when Karl Struss, A.S.C., handed him the golden statuette representing the 1932 Award of the Academy of Motion Picture Arts for the best photography of any picture released within the year. Lee Garmes was given this award for his work in "Shanghai Express." Garmes is at the left of the above picture receiving the congratulations of Karl Struss who was the winner of this coveted honor two years ago.



A typical commercial studio equipped for making advertising film in color

Color in Motion Picture Advertising

by

E. L. Dyer, A.S.C.

ADVERTISERS have looked with longing eyes at the motion picture screen for years. They know that to millions of Americans the motion picture was one source of romance, of relaxation—the one means to which they turned for a glimpse of the outside world, the pattern after which they modelled their homes and clothes and methods of living.

Many attempts have been made to utilize this potentially powerful medium. Advertising films have been produced—in many styles and kinds and lengths. A few have been successful—many have been failures. The generally unsatisfactory results were due mainly to three causes:

- (1) The advertiser had no means of knowing how much a film would, or should, cost.
- (2) Neither he nor the producers had any idea how long a film should be in order to insure public acceptance and at the same time tell a real story.
- (3) And even after the film was made, he had no means of knowing where, or when or for how long, it would be shown—if at all.

The causes, themselves, were due to lack of one basic requisite—organization, and until recently this lack of organization has kept the motion picture screen beyond the reach of national advertisers.

In 1930, this situation changed. In that year three of the leading producers of advertising films formed an alliance. These companies, each individually successful in its own operations, with experience ranging from ten to twenty years, had faced many problems and solved them. Each was supplying thoroughly organized motion picture advertising in its own territory. Thus, by uniting they were in a position to offer advertisers this media upon a national basis.

The result is the Theatre Service Corporation's Screen Broadcasts.

Every screen broadcast is photographed in technicolor and the Theatre Service Corporation's M. P. A. Studios in New Orleans represents a cross section of the average motion picture producing unit, not unlike many of Hollywood's own.

Experience has proved that approximately 50 seconds is the ideal screen time, or length for an advertising film. This allows for a well rounded story, and holds audience attention throughout. This may seem to many as being too short but if you have any doubts as to how much of a story can be told in 50 seconds, put your watch on the desk before you and see how much you can tell in that length of time.

There is no question as to when or where screen broadcasts will be shown. Theatre Service Corporation's facilities include exclusive contracts with first class theatre circuits throughout the country. These circuits control well over 2000 theatres in over 1700 communities. In addition there are hundreds of independently operated theatres under contract to exhibit screen broadcasts as part of their regular programs.

There is no guesswork about circulation. The advertiser knows in advance how many people will see and hear his message because they are sold on a basis of actual attendance in the theatres he contracts for.

To sum up the growth of screen broadcasts I will quote a few figures in circulation and territory covered. Screen broadcasts appear as a part of every program in over twenty five hundred theatres in more than seventeen hundred towns and cities east of the Rocky mountains and show to a weekly average of 7,528,000 persons, and the territory is now being developed on the Pacific coast.

Screen broadcasts are booked in theatres the same as feature pictures through the booking department of the company and are made up into reels of not over six fifty foot

Continued on Page 49

New RCA System Minimizes "Ground" Noises

A GREATLY increased range of tonal reproduction; an increased dynamic range with the ability to reproduce sound shadings from the merest whisper to the full ensemble effects of the symphony orchestra; and virtual elimination of extraneous "ground" noises by a new system of masking off the space on the sound track not actually utilized by the sound wave itself, are the principal features of the new RCA Victor "High Fidelity" recording system.

According to RCA Victor officials, film recorded with the new high fidelity system can be used in all types of projectors without any adjustments or changes, and can be counted upon to effect a great improvement in reproduction on even the oldest types of equipment.

The RCA Victor high fidelity recording system employs a variable area, "symmetrical" sound track. Instead of the familiar "saw-toothed" effect along one side of the sound track, the new recording produces a double-edged, symmetrical pattern, with both edges of the sound wave identical in every respect. This is accomplished by the development of a new optical system in which a triangular beam of light is focused on a horizontal opening leading to the sensitized film; so that, as the triangular beam vibrates in accordance with the incoming sound, small and larger portions of its light exposes the film as it moves past the horizontal opening, producing the double-edged effect.

The sound wave image on the developed film is clear and transparent, while the unused portion of the sound track film is left black and opaque. In this way, background noises formerly caused by shadows of grain in the film and minute dirt particles are minimized.

Reproducing speech and music in a frequency range of from 40 to 10,000 cycles, the new high fidelity system provides the widest range of reproduction ever available to the motion picture producer. Some idea of the extent of this range may be had when it is considered that the first sound film did not reproduce many frequencies clearly above 4000 cycles, and that the best sound systems now in use do not provide reproduction above 8000 cycles. In terms of audible sound this means that the subtle overtones, reaching up to 10,000 cycles, which give vitality and realistic timbre to speech and music are now faithfully reproduced.

An adjunct to the RCA Victor high fidelity system is the new "Velocity" ribbon microphone. This new microphone differs radically from ordinary microphones in that instead of the usual diaphragm it utilizes a thin strip of metallic ribbon which vibrates exactly to the velocity of air particles

set in motion by the sound. It is considerably more sensitive than other microphones and responds uniformly to the full range of frequencies from 40 to 10,000 cycles.

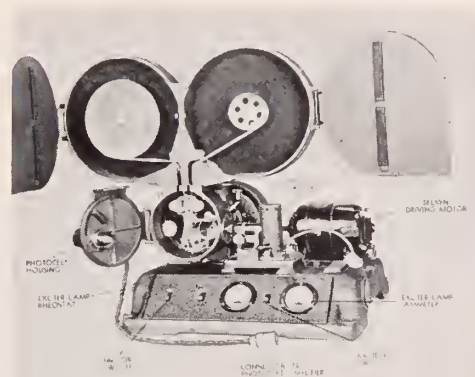
In brief a description that is widely used for this new system is that the sound is natural. It has, in other words, come so close to the natural sound as we know it in every day practice that it is hard to distinguish it as being anything different.

Together with this recording equipment an entirely new reproducing equipment has been designed. This takes in several definite changes in its system over the old style of reproducing, although it is the claim that film recorded with the High Fidelity System will show improvement in sound with the use of present reproducing apparatus.

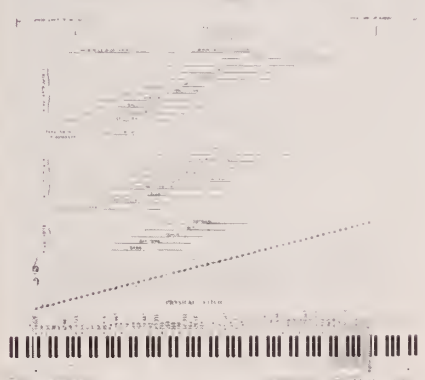
A portion of the new "High Fidelity" system has already been installed in the R.K.O. studios in Hollywood. Several test pictures are anticipated by various studios with the use of the sound trucks equipped by R.C.A. for this purpose.

A short subject "So This is Harris" was made on the High Fidelity equipment by R.K.O. in its entirety. The re-recording only, however, is now being used by that studio on all productions.

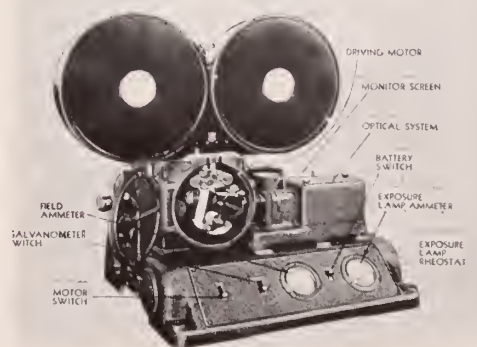
Film
Phono-
graph



Charting
sound on
piano
scale



High
Fidelity
Recorder





RIDDLE

ME THIS

What will the cinematography of 1942 be like? What will the cinematographers of 1942 be working with; what will they be doing?

TEN YEARS AGO. In THE AMERICAN CINEMATOG-RAPHER for August, 1922, Victor Milner, A.S.C., reflected upon the progress made by cinematography in the ten years between 1912 and 1922, and hazarded a guess as to "The Cinema in 1932". The accuracy of his forecast is amazing. He said, in part: "Some time ago a production, photographed in 1912 by Tony Gaudio and featuring King Baggott and Mary Pickford, was exhibited at an open meeting of the American Society of Cinematographers.

"Those at the meeting who viewed the picture realized that, if judged by the standards of 1912, it was nothing short of a master effort. The director and players no doubt had used all the film knowledge at their command. Tony Gaudio had certainly employed everything known to the cinematographer at that time. But the difference between the 1912 effort and the pictures of today (1922) stressed most forcibly the advancement which has been made in films in the past ten years.

"If so much progress has been made in the past decade, what, with the art as young as it is, are we to expect in 1932?

"Will the feature of today seem in 1932 as the 1912 picture does at present?

"Will we have escaped the glary artificial carbon lights ten years from now? The players who have to work before such lights are surely to be pitied. Will, in 1932, an amazing amount of equipment still be necessary to light a set as at present? Will we be working with a sensitized emulsion much more sensitive than that of today?

"Will an actinic Mazda light, screwed in a regular socket and with the addition, perhaps, of a few "U" tubes (Mercury-vapor), give us a reproduction of lights and shadows as we see them instead of the present exaggerated effect? Picture the cinematographer of 1932 using natural interiors; very often there will be no use of heavy cables and dozens of 'Winfields' to run over hardwood floors.

"Picture an actor sitting in an easy chair, reading with a lamp at his side—how much more effective it will be if we could screw in a photographic Mazda lamp and reproduce the soft, mellow color falling from that light.

"The man who puts himself in the position of a prophet places himself in difficulty. Possibly the writer is doing just this thing here; but to every student of cinematography it is more than evident that there must be changes in this art and industry which we are following in the ten years to come just as there were in the ten years we have lived through. We are . . . the pioneers. We have scratched the surface. Great facts and truths remain to be dug up and uncovered . . . Before we cinematographers who are filming pictures today give way to young men . . . we will observe changes which the writer has tried to outline here. But in the meantime we must all work hard—very hard.

"The writer hopes and expects these conditions to come

about, and who knows—they may be here much sooner than 1932. We are living today in an age of invention. The picture today can stand a revolutionary change. The public must be given something different and naturally the A.S.C. is looked to, cinematographically, to lead the way."

TODAY—Various members of the American Society of Cinematographers have been asked "What will cinematography be in 1942?" They have said . . .

VICTOR MILNER, A.S.C. "I am confident that cinematography will make as great strides in the next decade as it has in the one just passed. While we will probably not encounter any change so revolutionary as the advent of sound, we can confidently look forward to continued improvement in the technique of cinematography—in the materials and apparatus used by the cinematographers. Undoubtedly, the first major development will be the perfection of a truly noiseless camera. That is vitally important, for even the best of today's camera-blimps are heavy, unwieldy affairs, which are a serious hindrance to the entire company. Their weight and bulk definitely slow down the production of pictures: one cannot move quickly from one set-up to another, nor can one take full advantage of many of the possibilities of the cinema, for these huge, bulky blimps are not easily adapted to the making of many effective angle and moving shots. In this connection, it is really amazing how well we have managed under this handicap. But the truly silent camera must come soon. When it does, it will eliminate not only the bulk and weight of today's blimps, thereby permitting better and faster work, but also the necessity for shooting through glass, as we must now: this will in effect give us a faster film, for the additional glass surfaces through which we must shoot today decrease the amount of light reaching the film by approximately 11 per cent.

"Beyond this, I am confident that we will eventually have still faster film and lenses, permitting a further reduction of the light—and lighting equipment—needed to light a set, and allowing us to work with more nearly natural lighting effects. It is entirely probable that within the next ten years natural color cinematography will be brought to a point of both technical and commercial perfection. When this occurs, the cinematographer will be in a position to fulfill the true function of the artist—to hold up a mirror to life itself. For with truly natural lighting, color, form, and movement, the cinematographic artist will have a well-nigh perfect medium with which to work."

HAL MOHR, A.S.C. "It goes without saying that the materials and methods of cinematography are bound to advance in the next decade as they have in the years since 1922. Even with today's fast lenses and super-sensitive film, we are using far more light and lighting equipment than is desirable. In fact, we are in many cases not getting the full benefit of the film and objectives available already, for while super-sensitive film seemed a tremendously fast emulsion when it was introduced, we have become so accustomed to using it today that many of us are overlighting our sets, and thereby failing to realize to the full either the artistic or the economic advantages of fast film.

"As far as equipment goes, the most urgently needed—and therefore in all probability the most imminent improve-

ment—is certainly a really silent camera. To my mind, this will in all probability be a non-intermittent design, for only by suppressing the intermittent movement and its inevitable and noisy gearing, film-slap, etc., can we hope to achieve an absolutely noiseless camera. Such a design will give us definite advantages in increased shutter-apertures, as well; adapted to projection use, it will give us better screen brilliance, and greater film-life.

"But I am convinced that the greatest change will take place, not in the equipment and materials used by the cinematographer, but in the actual nature of his work. For many years, the cinematographer has been in truth a Director of Photography. He has left the actual operation of the cameras to the second, or operative cameramen, while he concentrated his attention upon the lighting and cinematography of the scene, cooperating with the director in staging the action photographically, etc. In the future, I am certain that the director and the first cinematographer as we now know them, will disappear: merged into a single man, charged with the responsibility for the visual realization of the picture, and assisted by the present operative cinematographers, and—if need be—by a dialogue director to coach the players in the reading of their lines. The recent appointment of Karl Freund, A.S.C., as a director is a significant step in this direction. Even more so is the success of his first picture, 'The Mummy.' The success of other cinematographer-directors, like George Hill, A.S.C., the late F. W. Murnau, and others, has proven that the day of the cinematographer-director is here. Less sensational, though even more conclusive, is the evidence provided daily in every studio, where experienced cinematographers, teamed with new or incompetent directors, are turning out successful pictures which are in fact directed by one man—the cameraman. When the industry really assimilates this lesson, there will be a rush to appoint the master cinematographers of today as the cinematographer-directors of tomorrow. Then—and then only—will the industry reach its goal of better and more economical productions."

DANIEL B. CLARK, A.S.C. "If cinematography makes as great progress in the next ten years as it has during the past decade, the cinematographer of 1942 will be photographing third-dimensional pictures, in perfect natural color, very probably on 16 mm. film and for television as well as for direct exhibition. At any rate, tremendous improvements in equipment and materials are inevitable, while it is equally certain that 16 mm. is going to figure enormously in the professional field, leaving 8 mm. for the amateur. And far before 1942, I am confident that the wiser producers will have recognized the efficiency and economy of combining the positions of first cinematographer and director, and entrusting the making of their pictures to today's great cameramen—many of whom are already doing that work actually, though receiving credit for the photographic work alone. The record of the cinematographers who have already been assigned to directing is ample proof of the value of this policy. When one considers the list of great pictures made by such men—extending from 'Abraham Lincoln,' directed by Phil Rosen, the first president of the A.S.C., and acclaimed as one of the ten outstanding pictures of all time, down through 'The Big House,' 'Min and Bill,' and 'Hell Divers,' from George Hill, A.S.C., to the latest, Karl Freund, A.S.C.'s 'The Mummy'—one realizes that this is inevitable."

KARL STRUSS, A.S.C.: "One hardly needs to state that the cinematographer of 1942 will have at his disposal better equipment and superior materials. But essentially, cinematography will be the same as it is today—as it has ever been: we will still be making pictures with light on a sensitive surface. We may have improved methods and materials; we may even be working—directly or indirectly—with television; but the essential principles cannot change. Technically, we will be making photographs of dramatic action. Artistically, we will be making pictures. The cinema-



Riddle Me This predicts what will happen in 1942. Above shows a present day studio with equipment; below a studio in 1920. Read what is foretold for 1942



tographer will still be the one who is responsible for transferring the dramatic action to the film-strip (this regardless of the materials or conditions of his work: unlike some of the contributors to this department last month, I hold that the cinematographer who does not feel himself capable of handling the artistic and technical problems of both interior and exterior photography is not a cinematographer).

"The great question of the future, to my mind, is 'Will the other phases of the industry have caught up with us yet?' It is a recognized fact that the cinematographer has attained a higher stage of artistic and technical perfection than have most of the other members of the studio personnel. I do not believe that there is a single cinematographer in the industry—even those rated as the 'ace' cinematographers of the major studios—who does not feel that his artistic output is closely limited by the inferior material that is put before his lens: that, in a word, he is

Continued on Page 49



IN THE

LABORATORY

with
Emery Huse, A.S.C.

Principles of Sensitometry and Their Practical Application

Part 19

THE general subject of sensitometry has been discussed rather fully in the preceding chapters in this series of articles. The more recent chapters dealt specifically with the methods of exposure, development, and density measurement. Attention was called to the fact that there is at the present time only one exposure device which can be considered a standard and that is the Eastman Type 11b sensitometer. Methods of development and typical negative, positive, and sound track developer formulas have been discussed. Details also have been given relative to the instruments and methods of density measurement. With these mechanical tools and chemical methods at hand it is now essential to show how these are applied in the control of motion picture film processing. It is first necessary to determine the various sensitometric constants, explain what they are, how they are determined, and give adequate interpretation of them. In this and the next few articles of this series this phase of sensitometry will be dealt with. In Figure 19, which accompanies this article, is shown a typical H and D sensitometric curve in which density is plotted against the logarithm of exposure. It has been previously mentioned that density is a logarithmic function. Therefore, it is necessary to use the logarithm of exposure for plotting the characteristic curve rather than the actual numerical value of exposure as expressed in terms of, for example, meter-candle-seconds.

For the sake of clarity it might be worth while to define and explain the term logarithm. By definition a logarithm is the number of times a number (called the base) must be multiplied by itself to produce a given number. Thus the logarithm (or log, as it is more generally written) of 10 is 1, for the first power of 10 is 10, thus 10^1 equals 10. The log of 100 is 2, for the second power of 10 is 100, thus 10^2 equals 10 times 10 equals 100. Similarly the log of 1000 is 3, for the third power of 10 is 1000, thus 10 to the third power is equal to 10 times 10 times 10 equals 1000. Hence the log of the number between 10 and 100 is a number between 1 and 2, while the log of a number between 100 and 1000 is a value between 2 and 3. This means, therefore, that the log of a two digit number, such as 89, for example, is 1 plus a decimal fraction, or, to be exact, 1.9494, and the log of a three digit number, such as 345 for example, is 2 plus a decimal fraction, or 2.5378. The

whole number of the log is called the "characteristic" and the decimal part, the "mantissa." It should also be stated that the log of a number between 1 and 10 is 0 plus a decimal fraction. In these instances the base, which was mentioned in the definition, is 10, and unless otherwise designated all logarithms are expressed in terms of 10 as the base. Such logarithms are referred to as common logarithms.

Referring again to Figure 19, it will be observed that the values given on the two axes are logarithms and in the values which actually express numerically the meter-candle-seconds evaluation of exposure or opacity. For example, at the point on the log E scale where the value is 2.0 it means that the exposure value expressed in meter-candle-seconds is 100. To use the reasoning given above, the logarithm of 100 is 2.0. In other words, it is 10 to the second power. It was previously shown that density is a logarithmic function by nature of its definition, D equals log O.

It has been proved experimentally that the sensitivity curve of an emulsion when plotted in terms of density-log E, gives a similarly shaped characteristic curve for all types of emulsions. This curve may be divided into three distinct sections, namely, the straight line, which is represented in

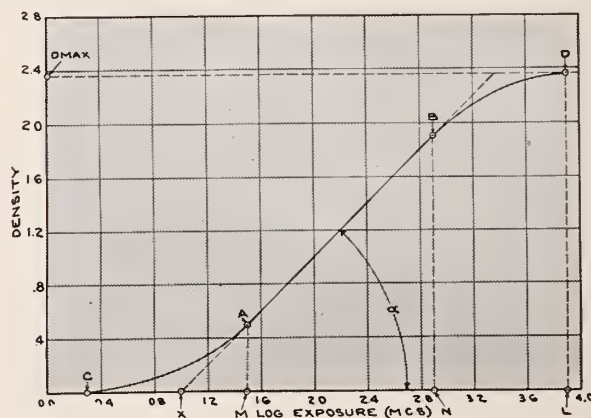


Fig. 19

Figure 19 by the section AB; the toe, represented by CA; and the shoulder by BD. From the shape, slope, and position of these various parts of the curve several of the important sensitometric constants can be determined.

In the next few articles we shall deal specifically with the various sensitometric constants.

THE *"Self-Contained"* **IDEA** *has been* **BLOWN to** **ATOMS**

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Our New York and Hollywood plants are especially equipped to develop negatives — to render a COMPLETE film laboratory service.

THE old fashioned idea that producers of motion pictures could produce, distribute, exhibit and PRINT their motion pictures has lost millions of dollars to the industry. We have PROVED that the industry needs specialization. We have saved millions of dollars for those producers who have placed their film printing with us.

Specialization has made it possible for Consolidated to develop plants and equipment with a yearly capacity of over a billion feet of "Certified Prints". We use only the finest raw stock and chemicals . . . employ only the most skilled operators . . . measure every process. Quality is CONTROLLED. And we maintain a costly research laboratory to seek further advancements in the art and science of film printing.

Accustomed to the instant demands characteristic of the industry, our highly specialized organization

can operate twenty-four hours a day when overnight delivery is required.

Specialization has established Consolidated Park as the safest place in the world to send your negatives. Our engineers have originated many exclusive devices for guarding them against every danger. And so well is our organization trained in secrecy and responsibility that the originality of your ideas can never be revealed to trade or public until release date.

Send your negatives to Consolidated—release printing specialists. Relieve yourself of a troublesome and hazardous burden. Only Consolidated with its working capital ample to carry out the largest printing contract, to make loans to its customers and to finance independent productions on a large scale, can give you the high quality and speedy service so essential to the profitable operation of every producer.



CONSOLIDATED FILM INDUSTRIES, INC.

NEW YORK



HOLLYWOOD

Oriental Made To Order

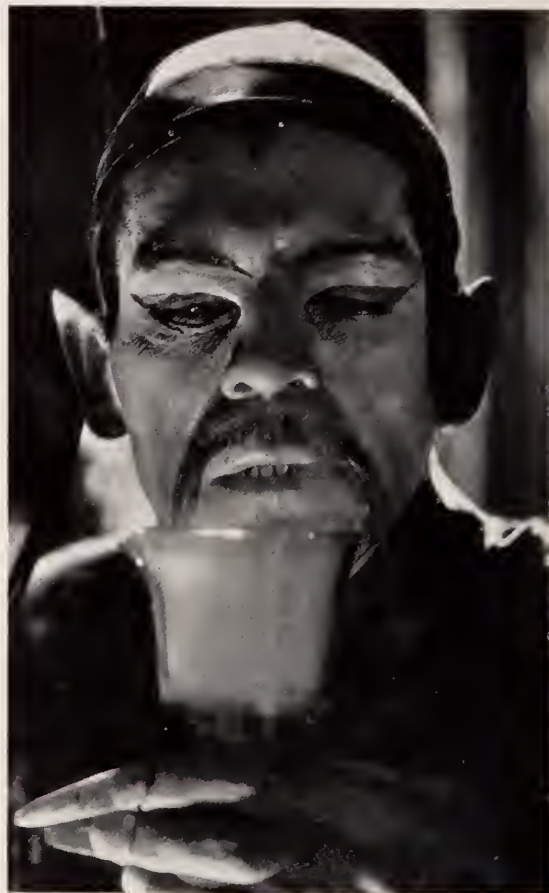
by

Cecil Holland, M.P.M.A.A.Head of Makeup Department,
Metro-Goldwyn-Mayer Studio.

SINCE the inception of the motion picture, the wily oriental has been recognized as excellent dramatic material. Unfamiliar as most of us are with their traditionally inscrutable mental processes, and fascinated by the bizarre atmosphere which they can impart to a picture, it is hardly to be wondered that the producers and scenarists have taken frequent advantage of the colorful celestials. Yet, strange as it may seem, whenever such pictures have been produced, the majority of the oriental parts have been played by occidentals! During the years that I have been in this business, I have seen the production of many films in which one or more of the principal characters was an oriental; yet in only a very few cases have these parts been played by bona fide Asiatics. Two or three Nipponese and Chinese players have, it is true, attained the position of stars or featured players here: artists like Anna May Wong, Sessue Hayakawa, and Sojin Kamayama cannot be forgotten; but they are the exceptions which prove the rule. If you will stop for a moment, and attempt to recall the outstanding oriental characterizations of the past and present, you will find that all of them have been played by men and women of distinctly occidental heritage. Outstanding among them, of course, are the late Lon Chaney, whose characterizations of Chinese in "Shadows," "Mr. Wu," and several other films were perfection itself; Richard Barthelmess, in the never-to-be-forgotten "Broken Blossoms," and, more recently, "Son of the Gods"; Alla Nazimova, in "The Red Lantern"; Edward G. Robinson and Loretta Young in "Hatchet Man"; and Myrna Loy and Warner Oland in an almost endless list of major and minor parts in many productions. All of these characterizations were convincingly oriental—some of them unforgettably so—despite the fact that the players were actually Europeans. This success was due to a perfect combination of dramatic ability and skilled makeup.

In turning occidentals into orientals, the makeup artist is faced with several problems. First of all, the contour of the face and features must be made over—recast, as it were, in an oriental mould. Secondly, the hair must be altered to a greater or less degree. Third and last, the coloring of the skin must be changed to give the impression of yellowness. In some cases, these changes are very easy; in others, they involve a great deal of delicate work, and result in a makeup which is at best uncomfortable to the wearer, and at times acutely painful.

The actual steps in creating such a makeup, of course, vary according to the individual upon whose face the makeup is being applied, and according to the characterization in question. At present, I have just completed a picture, "The Mask of Fu Manchu," in which the star, Boris Karloff, essayed a Chinese characterization. It was, moreover, a somewhat fantastic conception, Sax Rohmer's malign Chinese doctor—one in which the makeup had to be a



Boris Karloff as "Fu Manchu"

trifle exaggerated in order to heighten the implacable malignity of the character.

The first step, of course, was a careful study of Karloff's physiognomy, with reference to its potentially Chinese features—or lack of them. First of all, there were the eyes. In addition to being set in the head at a peculiar angle, a Chinaman's eyes are usually somewhat prominent. Karloff's are, naturally, normal European ones, and inclined to be receding under his heavy, straight brows. Therefore, in addition to suggesting the celestial slant, we must build the eyes up to suggest a greater prominence. This we did by carefully filling in the hollow between the eyelid and the brow. For this we used thin layers of cotton, which we shaped by saturating with collodion; after the desired thickness had been achieved, we finished it off with a surface made of nose-putty, which we were able to mould into the contour which gave us the desired effect, and blended well into the natural conformation of the face. This surface, of course, took the various makeup cosmetics—paint, powder, liners, etc.—quite as well as the natural skin would. To suggest the necessary Oriental slant, we drew the eyebrows slightly up, and, shaving off a bit of the outer ends of each, drew in a shape which gave us both the oriental slant and the "mephisto-effect" necessary for so malign a characterization. The next consideration was the nose. Karloff's nose is naturally more slender and delicately-chiselled than is normal in orientals; accordingly, we distended it with tiny plugs, placed in the nostrils, and likewise built up the outside a trifle with nose-putty. We next built up the ears with the same material, adding considerably at the tops, and making them rather pointed. After that, a villainous, wispy-looking moustache was hung over his upper lip, and a trace of coarse, black hair was fixed in the centre of his forehead, to protrude below the tight-fitting skull-

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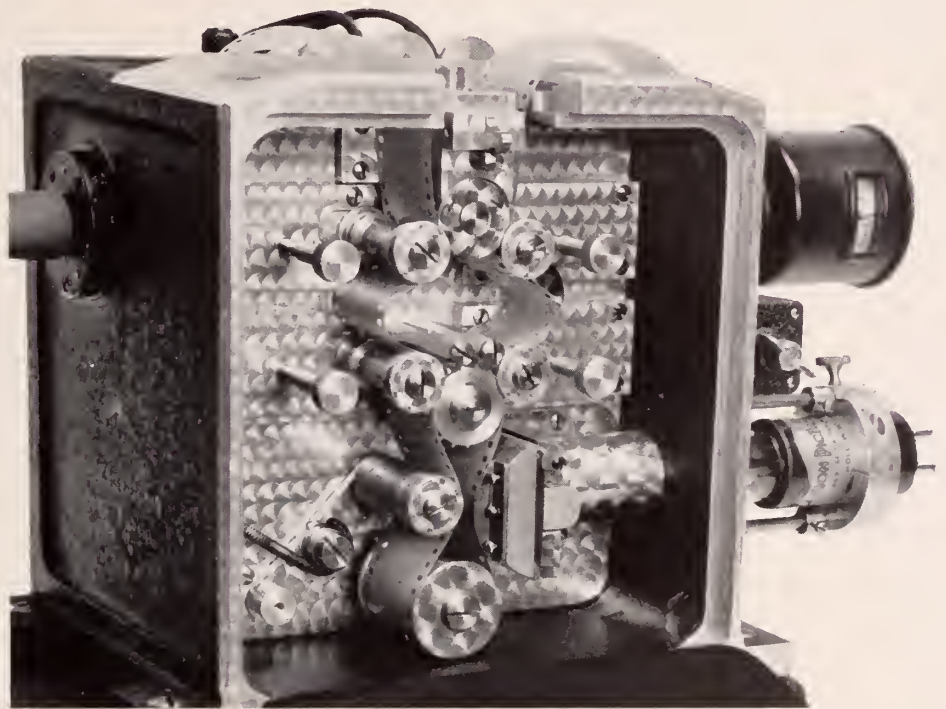
"ARTREEVES"

DEPENDABLE SOUND EQUIPMENT

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Others admit they imitate this equipment . . . they recognize its High Standard. But none has duplicated the perfection of its performance.



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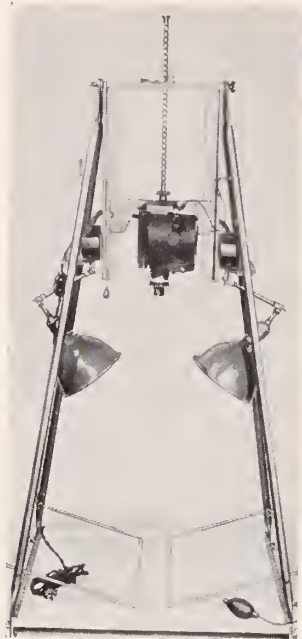
Hollywood MOTION PICTURE EQUIPMENT CO. LTD.

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CABLE ADDRESS ARTREEVES

HOLLYWOOD, CALIFORNIA, U.S.A.

WHEELS OF INDUSTRY



● The Bell & Howell Company announces a unit for making on 35 mm. film, animated drawings, maps, mechanigraphs, etc.; producing film slide negatives; photographing titles; also copying documents, books, and records — document copying being a new field for the motion picture camera with single exposure device.

The Animation Stand consists essentially of: A B & H Eyemo 35 mm. spring-driven camera. A rigid supporting stand rising from the four corners of a horizontal baseboard. A mount for the camera. This mount permits raising and lowering the camera as required by variations in the size of the material to be photographed. Two reflectors for photo-flood lamps. A "single-shot trigger," for exposing a single frame of film.

Provision for simplified centering and framing of subject.

A series of numbers, corresponding to the numbered divisions on the vertical slide, replaces the usual footage calibrations on the lens focusing scale.

The device is readily demountable and quickly reassembled, so that it can be transported.

● THE first equipment to be manufactured in the new factory of Hollywood Equipment Company at 645 N. Martel Avenue was secured by the Gulf Coast Studios of San Antonio, Texas where the Kier & Phillips Productions are made.

● A double purpose lamp has been designed by the Corcoran-Brown Lamp Co. according to an announcement from that concern. This lamp can be used with photo flood or photo flash lamps, also with regular 50 or 60 watt lamps for other uses.

It is designed with a universal joint that permits the tilting of the lamp in any direction. The reflectors are made removable. These lamps are put out under the trade name of "Flectors."

● According to an announcement from Dunning Process Company, that organization has equipped itself to attract the 16mm industrial field to its service. In addition to printing and developing, reducing 35mm to 16mm, it has also placed in an executive sales capacity Elliott A. Allen, formerly with U. S. Steel Corp. to conduct the activities of its Industrial Department.

It is the contention of the Dunning Process Company that with the acceptance of sound on 16mm a more

elastic form of salesmanship is open to commercial companies as well as a new avenue for distribution that will attract many toward this form of advertising.

Dunning has taken on the agency for the distribution of the R.C.A. sound on film 16mm projector. They have also inaugurated a system of distribution through fifteen key cities from coast to coast according to their announcement

● THE E. Leitz, Inc., announces a new model enlarger which they call the Valoy Enlarger. They claim it has more versatility than former models. It is equipped for masks for single movie frame negatives $\frac{3}{4} \times 1$ inch, Leica negatives $1 \times 1\frac{1}{2}$ inches and roll film miniature camera negatives $1\frac{1}{4} \times 1\frac{5}{8}$ inches. It has been equipped with a device that holds the negative perfectly flat during exposure. By means of a lever the film can be pulled in either direction without removing from the plate. The condenser acts as a pressure plate and holds the film firm and flat. It is removable for cleaning.

The lamp house encloses the 75-watt opal lamp which is adjustable as to distance from the condenser. Large cradles are mounted at each side of the gate which serve to hold the film roll while the enlargements are being made.

A nicked metal pillar supports the lamp house unit. The electric cord is carried inside of the pillar.

Four different paper-holders are available which may be placed upon the baseboard. These hold the paper flat by means of thin metal strips which are adjustable for any size enlargement. The strips also act as masks, to obtain a border around the print.

A special screw-mount is supplied which permits Leica Camera lenses to be mounted in the enlarger. A flange can be supplied which clamps onto the camera lens, taking care of diaphragm adjustments. A ruby filter may be attached which swings directly under the lens.

A magnifying glass, mounted upon a universal joint, can be mounted on the baseboard. It serves to

assist in obtaining critical sharpness of the image on the paper.

This firm also announces a service bureau for Leica owners. This department will offer advice, suggestions and answer any questions regarding the use of the Leica camera. A bulletin will be issued every month and sent to Leica photographers.

The service department will be under the direction of Willard D. Morgan and Karl A. Barleben, Jr., F. R. P. S.



THE BIGGEST MECHANICAL FACTOR IN TODAY'S MOVIES

EASTMAN Super-sensitive "Pan" has caused such widespread changes and improvements that it easily rates as the biggest mechanical factor in the excellence of today's motion picture. On the foundation supplied by this film, cameramen, directors, actors, and laboratories have been able to build a motion picture art as far ahead of old techniques as movies on the original Eastman "Pan" were ahead of color-blind photography...Eastman Super-sensitive "Pan" finds its fullest possible expression with the gray-backed base on which it is now supplied. Eastman Kodak Company. (J. E. Brulatour, Inc., Distributors, New York, Chicago, Hollywood.)

EASTMAN **SUPER-SENSITIVE**
PANCHROMATIC NEGATIVE (GRAY-BACKED)



HIGHLIGHTS of AMATEUR CONTEST

by

William Stull, A.S.C.

NOBODY left the lens-cap on—but a lot of folks forgot their scissors! That is the outstanding impression after viewing all of the hundreds of reels of film entered in the AMERICAN CINEMATOGRAPHER'S Contest. The average advanced amateur seems to be a mighty good photographer, and often a better-than-average director—but he is all too often a very poor film-editor. More films failed through bad cutting than through almost any other single shortcoming. In many pictures, every time a really beautiful scene appeared, the judges found that they could be almost sure to see that scene repeated, with variations, at least five or six times. Here, a slightly different exposure—there, a slightly different filtering—then several slightly different angles. Had the maker been content to show only the original, perfect scene, and cull the others, his picture would certainly be rated higher in both editing and photography. No one wants to see an artist's preliminary sketches; only the finished product is of interest to the world. Much virtue in a pair of shears!

The 9.5 mm. contingent was surprisingly large. More than half of the entries from Japan were made with this equipment. America's sole upholder of 9.5 came from Iowa.

While speaking of the 9.5 mm. entries, we must commend Mr. Wagoro Arai, of Tokio, who entered a 9.5 mm. animated cartoon. The making of these subjects is a difficult matter for an amateur even with 35 mm. equipment—and Mr. Arai's achievement in turning out so excellent a cartoon on 9.5 mm. is of real merit.

The amateur news film was excellently represented. Worthy of especial note are the entries of Mr. Charles Meulemans, "X Olympiad"; M. Charles Rhein, "Exposition Internationale, Anvers, 1931"; and Miss Ruth Rodgers, "Royal Air Force Display," hailing from Hollywood, Belgium and England, respectively.

The standard of photography shown in the better films proved a revelation to the professional cinematographers who formed the special sub-committees detailed to the preliminary judging. More than once during these sessions I overheard men like Victor Milner, A.S.C., or Karl Struss, A.S.C.—outstanding artists in professional camerawork—remark, "I'd be proud to have such photography in one of my own pictures!"

With films entered from England, Australia, Japan, Holland, Korea, Catalonia, South Africa, Alaska, Italy, Belgium, France, and all parts of the United States, the Contest proved an International affair in more ways than one—for it required all of the linguistic ability of the members of the A.S.C. to translate the titles of the various entries, many of which were in the language of the land of their origin. We hereby single out one of the entries, Senor Delimir

de Caralt, and ask him to take a bow for his forethought in sending a synopsis of his entry, "Montserrat," and a complete list of its subtitles (which were in Catalan), together with a translation into Spanish and English. Viva El Senor de Caralt!

Of the foreign countries, Japan had the largest representation, with nearly a dozen entries. Some of them were the finest combinations of perfect technique and sheer cinematic artistry that I have ever viewed. The greatest professionals might well be proud of such flawless work. Banzai Nippon!

Despite the responsibility entailed in the final judging, the various notable professional artists and technicians who formed the final jury were eager to participate and to see what their amateur fellows were doing. One famous director cancelled a story conference with the author and producer of his next film in order to attend; an equally famous star stayed away from the preview of her latest picture for the same reason. All of them enjoyed the affair hugely. I have rarely seen an audience so completely interested in a program of motion pictures, either professional or amateur.

After the judging, an almost universal subject of discussion was, "What is an amateur picture, anyhow? How can one compare a true home movie like "A Finny Fable" with an elaborate dramatic production, made with professional technique but by bona fide amateurs, like "Tarzan, Jr." or "The Black Door"? The answer appears to be the decision of the Officials of the A.S.C. to greatly enlarge the scope of next year's contest so that there may be definite awards for each of the many possible classifications of amateur-made productions.

After viewing the excellent aerial sequences in "The Black Door," "Sky Lark," "Air Trails of the Sierras" and "Trail of the Eagle," Elmer G. Dyer, A.S.C., the world's premier aerial cinematographer, admitted that he felt distinctly humbled. "Some of those amateurs did so well with their air work," he said, "that they made me feel like an amateur. Well, maybe I am—I certainly haven't had the opportunity for studying flying camerawork that some of these Air Corps officers have had. I'd sure like to meet those boys—maybe I could learn a few things about using a Filmo in the air from them!"

One of the executives attending the judging was W. J. German of the Brulattour Co., who was so impressed with the technical excellence of some of the pictures that he has asked the permission of the A.S.C. to take the films back to Rochester to show to the executives of the Eastman Kodak Co.

The final determination of the winners of the contest has proved an intricate bit of mathematics, as the ballots throughout the judging were marked according to a point system, giving separate ratings for photography, composition, direction, production technique, story, titles, editing, acting and entertainment value. After watching the clerical staff of the AMERICAN CINEMATOGRAPHER office integrating

Continued on Page 48

Biggest News of the Christmas Season...

CINÉ-KODAK EIGHT^{\$29⁵⁰}

MODEL 20



cuts film cost nearly $\frac{2}{3}$

THIS year Eastman makes movies an inexpensive gift with Ciné-Kodak Eight, Model 20, for only \$29.50... a genuine, full-fledged home movie camera fitted with a Kodak Anastigmat *f*.3.5 lens, built-in exposure guide, automatic footage indicator, and eye-level finders.

Ciné-Kodak Eight loads with a special 25-foot film, 16 mm. wide. It runs the film past the lens

twice, leaving two separate images along its full length. Eastman finishes this 25-foot roll, slits it, splices it, and returns it as a single 50-foot length, 8 mm. wide—ready to project in Kodascope Eight. For \$2.25 you get movies that last as long on the screen as the usual 100-foot roll at \$6.

Give home movies with Ciné-Kodak Eight, Model 20... in its attractive gift box.

Now... A New *Eight with f.1.9 Lens*

A new Ciné-Kodak Eight... the Model 60... is equipped with a Kodak Anastigmat *f*.1.9 lens, which is instantly interchangeable with an *f*.4.5 1½-inch telephoto lens supplied as extra equipment. A beautifully finished photographic instrument, its price, including carrying case, is \$79.50.

Kodascopes Eight are priced at \$22.50, \$34.50, and \$75. Your dealer will gladly show them to you.

EASTMAN KODAK COMPANY, Rochester, N. Y.



TREND

of 16 mm. FILM

RAPID strides are being made by the various manufacturers of 16 mm. equipment. Here and abroad a keen interest is being evinced in the future of this market. Sound on 16 mm. film is the target at which many are aiming. Color is another phase that is receiving earnest attention. We are offering you on this page some of the developments now under way and others that will be ready for marketing soon.

Victor Animatograph Interested in Color Camera

ACCORDING to various authorities the Victor Animatograph Company have their engineering and experimental department earnestly experimenting with a new camera that will be used for the taking of 16 mm. pictures in color. According to reports the system used will be the cine color of Hollywood.

Germans Open Studio for 16 MM. Users

ONE of Germany's leading supply houses has opened a studio in Berlin for the use of the 16 mm. amateur. It is their intention to open a second studio. This, it is claimed will be completely equipped with all professional apparatus and will have sufficient lighting for a professional

16 mm. film and production. It is claimed this studio will have a floor space of 7000 square feet.

Germany Developing Sound On 16 MM. Film

ACCORDING to press reports from Germany the KLANG-FILM announces that the technical work in developing 16 mm. sound-on-film apparatus has been completed and that the first apparatus will be put on the market soon.

Experiments With 16 MM. in Theatre

AS an experiment, a special matinee was offered in one of Berlin's theatres of 16 mm. subjects solely. It is claimed the technical end of the showing was excellent and the illumination fully up to standard. It is the claim of the reporter that the photographic quality of all the subjects was very fine. While the program was satisfactory, it was not felt that the best could come up to the average of the professional presentations.

Bell & Howell to Make Sound Projector

BELL & HOWELL has ready for manufacture a new 16 mm. sound-on-film projector, having been licensed by RCA to manufacture under their patents. It is expected

Continued on Page 36



No filter

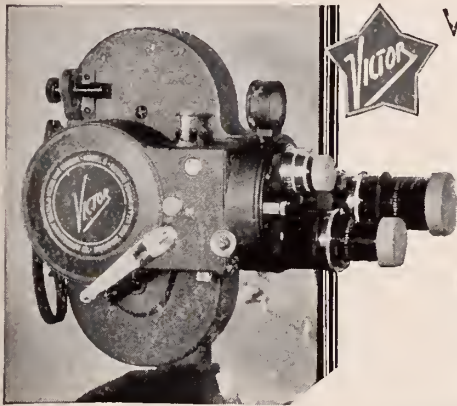


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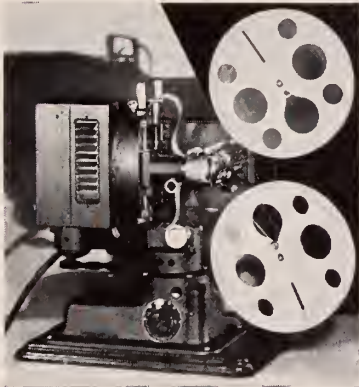
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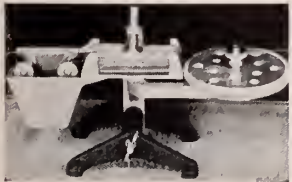
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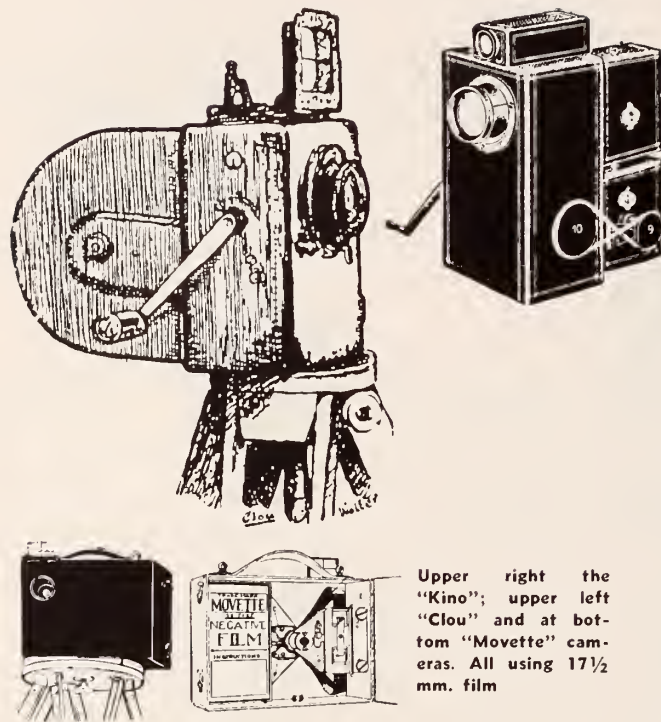
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Upper right the "Kino"; upper left "Clou" and at bottom "Movette" cameras. All using 17½ mm. film

THE German firm, Ernemann, A.G., of Dresden, made great efforts to popularize substandard film. In 1903 they introduced an apparatus for amateur cinematography which is doubly notable as it was the first to bear the name "Kino." It consisted of a box measuring 6x14x8 centimetres, which contained the movement, and two detachable metal magazines holding 10 metres (30 ft.) of film each. The film was 17½mm. wide, and perforated in the centre. A claw movement with a pilot pin ensured perfectly steady pictures. The shutter consisted of a drum with an adjustable slot. The lens was set in a rack-and-pinion mount similar to those used in projection-lenses; focusing was direct on the film, while a tubular finder was provided at the top of the box. The camera was hand-cranked, with the regulation one- and eight-pictures-per-turn movements. The take-up magazine was driven by a wire belt.

This narrow-film camera was demonstrated in 1903 before a select gathering of the Dresden City Council; the next public showing took place November 7, 1904, at the Vienna Photoclub.

The first model of the Ernemann single-sprocket movie camera was designed for taking pictures only, with a separate apparatus used for projection. Just a few hundred of this first model were built. In 1904 a second model appeared on the market. It showed great improvement in both the construction and the mechanical design of the apparatus. Instead of the two single magazines a double one was used, and the exposed film was taken up by means of a spring-driven clockwork take-up built into the magazine. This second model could be used for taking, printing and projecting films. The claw movement was replaced by a Maltese Cross; the drum shutter was supplanted by an adjustable disc. Constant sharp focus was insured by the introduction of a pressure plate, which was here used, apparently, for the first time.

This model, like the previous one, was hand-cranked, with 8:1 and 1:1 shafts. The magazine was fastened simply to the camera, as the built-in clockwork take-up worked independently of the camera-movement. A

Forerunners

built-in finder permitted focusing directly on the film, and the lens was mounted in a spiral focusing mount similar to those in use today. When used as a projector, the camera was placed on a special stand fitted with a fixed lamphouse. Like all the projectors of the period, it was hand-cranked.

Another Dresden firm also made apparatus for using the 17.5mm., center-perforated film used by Ernemann. This apparatus was the Kretzschmar, and was very similar to the Ernemann model, using a Maltese Cross movement, with pilot pins, 8:1 and 1:1 cranks, and adapted for taking, printing and projection.

In 1912 the French firm, Pathe Freres, introduced a sub-standard projection apparatus known as the Pathe "K-O-K." For this they introduced a special film, 28mm. in width, with a special perforation: four perforations per frame on one side of the frame, but only one to the frame on the other side. The projector for this system was an entirely self-contained unit. The current necessary for the projection-light was generated by a small dynamo belted to the crank which powered the movement. An ingenious friction-drive took care that the light was constant regardless of the speed of the crank; there was no danger of burning out the lamp through generating too high a voltage.

In 1913 the manufacture of this apparatus was transferred to America. Under the name of "Pathescope" an improved projector for use with any existing electric-light circuit was marketed; also a camera for photography with the previously mentioned 28mm. Pathescope film. The Pathe Company also established a considerable library of 28mm. subjects, using, for the most part, reduction prints from the 35mm. productions of the Pathe Studios.

(EDITOR'S NOTE: The introduction of this 28mm. Pathescope System appears to have been motivated less by consideration of economy than by a desire to keep the inflammable, nitrate-base professional films out of the home field; Pathescope films were coated on Acetate-base "Safety Film." This standard achieved a considerable degree of popularity in American Home Movie and Educational circles up to the introduction of the 16mm. system. In 1918 the Society of Motion Picture Engineers officially recognized two Film Standards: the professional 35mm. standard, and the 28mm. "Safety Standard." The latter was identical with the Pathescope standard except that it was perforated conventionally, with four perforations per frame on each side of the film. "Safety Standard" and "Pathescope Standard" prints were therefore interchangeable in projection on Pathescope machines, but Safety Standard projectors could not, unless modified, use Pathescope prints. Like Pathescope film, Safety Standard film was coated on slow-burning Safety Stock. Both systems used the negative-positive system, which was obviously almost as costly as regular 35mm. film, having only the advantage of the lessened fire-hazard.)

In 1912 there also appeared the "Duoscope," which may be termed the simplest and most original of all narrow-film cameras. It produced negatives which were afterwards enlarged on paper; these single-frame paper enlargements were bound together in little booklets, and viewed by rapidly flipping the leaves with the hand, on the principle of the old "Mutoscope." These pocket movie books were commercially marketed as "Biofix." The film was 17½

of the Amateur Film

by
Guido Seeber*

Translated by
Hatto Tappenbeck, A.S.C.
(Concluded from November)

mm. wide, center perforated, but with two perforation-holes between each frame, arranged side by side. The camera-movement consisted of a double arm which moved the film onto and off from two fixed pilot pins. The camera could also be used as a projector, in which case a flash-light battery supplied the electricity for the light.

From Rochester, in 1917, came another camera which showed itself a true ancestor of the present 16 mm. equipment. This was the "Movette," which used 17½ mm. safety film, with two perforations per frame on either side. Negative film was used, supplied in a daylight-loading double magazine of 50 foot capacity. The camera was unusual too in that the magazine was placed in the camera at right angles to the axis of the lens, as may be seen from the illustration. The "Movette" camera was hand-cranked, and a separate mechanism was used for projection. This, too, was hand-driven.

(EDITOR'S NOTE: Another interesting camera and projector for this 17½ mm. system was introduced about 1918 by the Wilart Instrument Co., of New Rochelle, N. Y. This firm was then a well-known manufacturer of studio cameras. Their amateur camera was known as the "Actograph," and was of truly professional design, with a metal box, fitted with a Bausch & Lomb "Tessar" lens. The camera was hand-cranked, with both 8:1 and 1:1 movements and double outside magazines identical with those now used on professional Bell & Howell and Mitchell cameras, but holding only about 100 feet of film. The magazines were placed on the top rear corner of the camera. This camera was later enlarged and marketed as a 35 mm. camera, 200 foot capacity, and known as the "Wilart News Camera." The design was later modified somewhat by the

*Reprinted from "Filmtechnik," Berlin.

New York Institute of Photography, and the camera re-christened the "Institute Standard." There are many of these cameras still in use.)

In 1920 an Austrian firm introduced a 17½ mm. known as the "Clou," using 17½ mm. film perforated much as modern 16 mm. film is, save that the perforations were round. This little camera had a magazine in the rear, employing a single sprocket for both feeding and taking up the film. The film could be cranked either forwards or backwards as desired. The movement consisted of a heart-shaped eccentric cam. The "Clou" was made to serve as a camera, printer and projector interchangeably.

(EDITOR'S NOTE: About the same time, Andre deBrie in Paris introduced his "Sept" camera, a small, clockwork driven hand-camera for 35 mm. film, adapted to make either 7 metres of motion pictures or 250 "stills," single-frame size, at a loading. The "Sept," too, was adapted to take, print and project. It made pictures of excellent quality, and was the forerunner of both the "Eyemo" type of cine hand-camera and the "Leica" type of cine-film still-camera.)

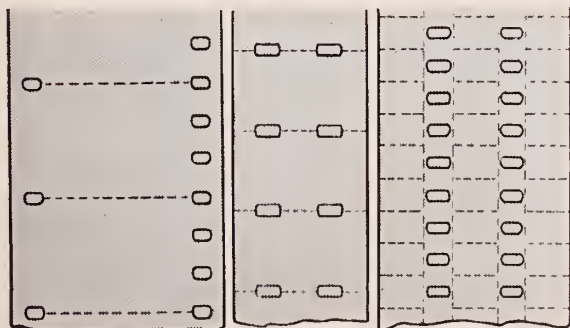
Linhof, a well-known camera firm of Munich, tried with their "Coco" camera to utilize standard 35 mm. film split in half. But for a number of technical reasons, this split-film attempt failed, as had that of Birt Acres several decades previously.

Edison had introduced a home projector which, in point of novelty, deserves mention. It was constructed along the lines of the standard projectors of its period, but used a special 22 mm. film bearing three rows of pictures, with a perforation between each row. After projecting the first row of pictures, the projection aperture was moved over to the next row, and the film cranked through backwards, while the last row of pictures was projected by a third movement of the aperture, and by turning the crank forward again. This was made possible by printing the several rows of images alternately in opposite directions. As the small image required a strong illumination, a fairly powerful arc light was used.

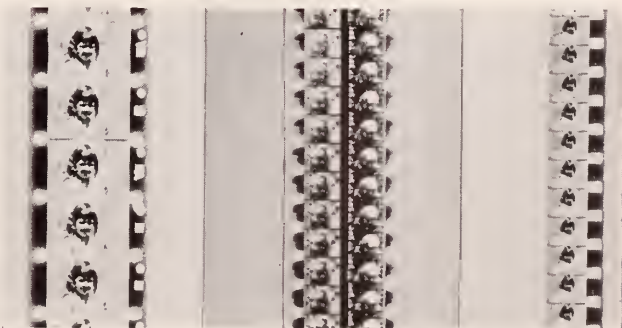
About 1923 Pathe introduced the "Pathe Baby" (known as "Pathex" in America), a projector which used a film only 9½ mm. in width. Later on this firm introduced several 9½ mm. cameras, and established a large rental library. The optical reduction-prints of well known professional films helped tremendously in the sale of "Pathe Baby" apparatus, and secured a wide spread appeal all over the world. (EDITOR'S NOTE: Although the 9½ mm. standard is but little used in America, it is extremely popular in other parts of the world, especially as it is claimed to be even more economical in operation than standard 16 mm.)

We have already mentioned that the Eastman Kodak Co. initiated the 16 mm. film. With their original "Cine Kodak" (now termed the Model "A"), a relatively large,

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Left, Pathescope 28 mm. film;
Center, Duoscope 17½ mm. film;
Right, Edison Home Movie 35 mm.



Left, present 16mm. standard; Center, 16 mm. before splitting into 8 mm; Right, same film after splitting



Blanche Sewell at her editing table in the M.G.M. studios

Editing is Easy When

by

Blanche Sewell

Editor "Grand Hotel"

ONE of the easiest jobs of editing I ever had was "Grand Hotel." To the novice this may seem strange. "Grand Hotel" with its story flitting through the one location dealing with so many import-

ant personalities would indicate an intricate job of cutting and editing.

But the reason is simple. It has a story, a very complete story. One that was definitely adhered to. The directors, the camera and the actors followed the script in close detail. When the picture reached our department we found the camera had done most of our work.

But, of course, that isn't true of all pictures. The one thing, however, that is fundamentally true is that before you can edit a picture you must have a story. You see you are not really editing so much film, but you are editing a story, the same as an editor of a magazine edits contributions that come to him from authors. Therefore, the use of the word "editor" in the film industry.

As writers will ramble along on some phase of their article, giving you untold detail and over-lengthy descriptions, so sometimes the producer and director are inclined to make certain sequences of their pictures—in other words, they are pet scenes, everyone has them, they visualize great huzzahs coming from the audience when they view them, whereas the usual result is a flat and cold reception that leaves the audiences, in present day parlance, "blah". And by the same token that "pet" scenes are most frequently very boring, follow your first hunch when you find some scene that makes a good impression on you, but which through its many showings and process of editing may become a bit tiresome. Those who see it for the first time are going to receive the same impression from this scene that you had on first viewing it.

You know there is such a thing as tempo in pictures, and also moods. But let's touch upon tempo. It's all important. Your subject matter is going to dictate this. If you have a story that goes along at a good pace it means your scenes must be short, brisk, snappy. Certainly none of them over-length, unless you have an idea of definite contrast that will help lift the following scene to a seemingly greater tempo without actually cutting it too short. But these cases are rare, and would occur in a film very seldom. Too many of such contrasting episodes would change the tempo of your picture entirely and instead of making it the fast moving subject you intended would make it lethargic and not at all the entertainment you had in mind.

There is such a thing as dull footage. Footage that doesn't mean a great deal to the story. Footage that might be very fine photographically, might have something in it which you admire over-much, but which when blended with the whole takes you right back to a "pet" scene, although it was not entered in your mental category as such. With silent pictures such as you make this is a great temptation. We here who have to deal with sound in the studios are restricted in our scenes to the conversation and sound that it contains. We sometimes cannot take out what we might feel a dull portion, as the lines must be finished to give an excuse for the next scene or for something coming later in the picture.

But most amateurs deal with either scenics, or something intimate in and around their homes. There would seem to be no story in this material, but before you can have a picture that entertains there must be a story no matter how slight a thread it may run on. Just a little thought before shooting will give you some sort of an idea for a story, if it is the baby crawling, perhaps he is crawling toward some object, something that has attracted his attention. Here you have a chance to do a great deal of editing with your camera. You show the object he is trying to get. You flash back to the baby eyeing it. You give the long shot showing the distance he must traverse, etc. You have a bit of a story there. You can build up hin-

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BLEND THEM . . .

The Scenic and The Commonplace

by
Elmer Clifton

as told to
Wilfred Lucas

LEARNED a severe lesson in the producing of scenics. A rain had filled the sky with beautiful clouds and we made some interesting views of the clouds. Just for fun we took a shot of some children making mud pies and the mud oozing through their toes. In the final cutting of the picture the two scenes went together so this scene was left in. When the reviewers and the audience entirely ignored the beautiful clouds but went into ecstasies over the mud oozing through the little boy's toes, I realized that nature was a vast subject. It has a myriad of aspects.

Too perfect photography and the choice of only dainty bits of scenery do not truly represent Nature. One must show some of the rough seams on the unlined inside of Nature's gown. One must let the audience see the littered gutters, as well as the clean-swept, garnished Sunday streets.

He would be a very silly parent who would feed his growing child on fudge and cream puffs exclusively. As Longfellow said "Into each life some rain must fall." So there must be cloud and fog and rain throughout the world. There must be contrasts, because each day of our lives is filled with contrasts, and the photographer who goes out with the finest of lenses and the very latest of filters and mattes and gadgets and brings back just a series of beauty shots, has missed the target altogether. His total effect is one of unreality; for even the lowly toad

makes an interesting photographic study in its natural element. Time after time, you will find in the international photo exhibitions, the photographer most likely to win the award is someone who has painstakingly tried to put upon the plate some such subject as a foggy street with a lone silhouette figure as the only suggestion of life.

Our cinema public is avid for scenes of travel—foreign or domestic, but, as I said before, not merely the beauty spots. They demand inside information about the people of those places they have never seen—details of their home life, their social intercourse, their peculiar habits.

The late Alexander Penrod who photographed with me around the world was a marvel at cooperation. He was just as interested in photographing a grain of dust as he was in making a masterpiece of photographic art of the Swe-Dagon Pagoda.

Low Physioc is another photographer who has an uncanny knack of catching the unusual. He just finished an expedition with George Allen photographing the "Phantom Sea." Mr. Physioc's technique is the use of a great variety of lenses which enable him to present a story from different angles.

I recently had occasion to ask Mr. Physioc to make some photographic studies that would fit in with a film taken in 1915. A detail like this to most cinematographers would have been impossible as their minds run in accord with the latest ultra films, soft developments, etc. Mr. Physioc, very cleverly, hunted around until he found raw stock a year old; then he used an old fashioned camera and slow lenses. The result was a perfectly matched picture. The scenes fitted together beautifully. Here is an instance where a man whose vision is guided only by the modern methods would have been unsuccessful.

Dr. E. A. Briggs of the University of Sydney, Australia, has made several trips for me into the Jungles of New Guinea, Ceylon, etc. He is a marvel at collecting detail; for he has learned in conducting his classes at the University of Sydney the difficulty of explaining something to an audience. Therefore, he photographs with an explanatory eye. And so your pictures must explain to the cinema public. If they see just a swarming street or a picture of some great temple, no matter how beautifully the scenes may have been photographed, they will get no proper idea of the race who inhabit that street or who worship in that temple, until they have been given intimate, homely pictures of the people and the customs that make those people different from those our public sees in their own daily life.

A picture of a little Mongolian boy kicking a dog will

Continued on Page 39

The
approaching
sandstorm
is of greater
interest than
the beauty of
the scene





Ann
Harding

Learn how to stand and sit gracefully and acting'll come easier

Be Yourself If You Want to Act

by

Ann Harding

DON'T try to be greater than the personality you are portraying. That is fatal. It leads to ludicrous over-exaggerations.

Acting is an instinctive art; something that you do or do not possess. Those who have the spark in them can learn to materialize it in the form of dramatic expression; those who haven't had better pursue some other ambition.

I am assuming that this article of mine will reach those who have experimented in the dramatic arts and who know by this time whether or not they can act.

To those the primary law is: Be Yourself. Speak, walk and sit naturally. Never become conscious that you are in

a play and NEVER think that you are doing poorly, for this leads to exaggeration and affectation.

Over-emphasis is the terror of most great actors and actresses. It isn't needed except rarely and then it can be done only with the greatest skill.

There is no instruction I can give that will teach you how to act if you haven't it in you. Good acting is natural acting. You would consider that person balmy who, in the course of a conversation, punctuated his words with grimaces and exaggerated movements of the hands and body. That is the fault of most amateurs who lose track of the fact that an actor's job is to mirror people you and I know. They are people whose mannerisms and habits you know. They can't be made to appear silly—unless they are comic characters.

For the amateur I would say this. Learn your part thoroughly then stand in front of a full-length mirror and see yourself act that part. You must, of course, be super-critical. Watch carefully against awkward movements of the hands—that bit of self-consciousness that attacks all beginners.

Repeat your work in front of the mirror time and time again until you are sure you are acting calmly and naturally and with composure. Those hands and arms, if you watch them intently enough, will soon take care of themselves. They will lie naturally, will lose their jerkiness and soon you will forget that you have hands.

I can't be too insistent upon this matter of hands and arms. They are an important part of acting. An experienced actor uses them for expression. Notable for the use of his hands is Leslie Howard who was with me in Radio Pictures' "The Animal Kingdom."

Leslie can, I am sure, tell as much with his hands as an ordinary actor can with his voice. He uses them to punctuate his words. He doesn't wave them like windmills, or clasp and unclasp them. But there are subtle movements, little deft touches here and there that characterize his lines and emphasize the message in his voice.

So few young actors and actresses sit down properly that I am going to give a few words of advice on this phase of the art. It would seem unimportant, but if the young player feels stiff or frightened, the act of sitting down becomes one of the most ludicrous things I know.

There really is no excuse for this. Sitting is one of the most frequent and most natural things we do. Then why is it so difficult for an amateur player?

Again we come to the cure-all: "Be Yourself!"

The act of sitting during the progress of a play should be done easily—and comfortably. Sit so that you can rise easily—without the help of your hands—practice this, try one foot slightly in front of the other as you sit down. You'll notice it helps you greatly to rise easily and comfortably. This same posture in standing gives you more graceful lines. Unless you can control the feeling of discomfort you will never become a good actor or actress. It is the lack of comfort, induced by self-consciousness or fright, that will keep you a rank amateur when you might just as easily be a good amateur or a good professional.

On the stage, or in a scene for a motion picture, I forget the fact that I am in a play and that I am representing a fictional character. As a matter of fact, I study that role for weeks, and some times months, until I am that character.

I am the girl you see on the screen, not an actress. The so-called Ann Harding personality doesn't try to overshadow that creature I am personifying. The real Ann Harding may differ in matters of morals, education and ethics from the

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Learn to Listen Well!

Advises

Leslie Howard

ACTING, George Arliss once remarked, is not so much being natural as it is being unnatural without getting caught at it. The physical limitations of the theatre and the screen often force the actor to do things which would seem most unnatural in real life, but which are necessary to a successful performance on the stage or before a camera. The art of acting, therefore, consists more than a little of knowing how to make these necessarily unnatural acts seem natural.

On the stage, for instance, one must—even in the most intimate scenes—project one's voice so that the occupants of the farthest seats in the auditorium can understand what is being said; in a silent film, one must project his pantomime so that it will take the place of the words which cannot be uttered. In talking pictures, on the other hand, between the all-seeing eye of the camera, and the sensitive ear of the microphone, the actor need project neither his voice nor his action. Rather, in fact, he is called upon to restrain them to a degree which, viewed in the light of stage, or silent-film technique, seems unnatural in its very lack of unnaturalness. For this reason, we find that often the best talking-picture performances are those which, in the actual making, seem amateurish in their lack of the theatrical mannerisms to which we of the legitimate theatre are accustomed.

But the amateur cinema player, I realize, is hardly interested in the technique of stage or sound-film acting, for the apparatus with which he works is not yet adapted to the making of sound films. Therefore any discussion of screen acting for the amateur must necessarily be predicated upon the technique of the silent cinema.

The basis of all acting is summed up in "Hamlet's" speech to the players, whom he tells to "Suit the action to the word and the word to the action." In the theatre or in a talking film, this is easy; but in a silent film one must remember that if he follows this precept to the letter, much of his action is likely to be cut out to give place to the printed title that carries his words to the audience. Therefore he must be a trifle unnatural, and perform his illustrative pantomime either a bit before or a bit after he speaks his title; as a rule, the latter is preferable. One must, however, bear in mind that the printed title is going to be inserted, and that it will in a large measure speak for him: therefore, a minimum of pantomime is desirable. The greatest artists of the silent screen—men like Emil Jannings and Lon Chaney—were those who knew their medium so perfectly that they were able to convey the maximum of thought with the minimum of physical effort.

Screen acting is, above all, mental acting. On the stage one can rely to a surprising degree upon vocal inflection; but on the screen—even in a talking picture—the player must make his face and especially his eyes the chief medium of expression. This does not by any means mean that screen acting must be, as the saying is, "mugging." If you will

study the work of the outstanding players of the screen—artists like Chaplin, Jannings, Lillian Gish, Charles Laughton, Janet Gaynor, Mary Pickford, Marie Dressler, or a dozen others one could easily name—you will find that while they make the face and eyes the principal media for their dramatic expression, they do so with marked restraint. Theirs is not so much facial expression as mental expression. Their acting is done primarily with the brain: first of all, they know the inner meanings of their roles. Then they let their actions and expressions reflect that clean-cut mental concept of the characterization. Lastly, their knowledge of the mechanics of acting enables them to preserve the clear physical reflection of their mental characterization, with every superfluous physical movement eliminated.

A clear understanding of the part is indispensable to a good characterization; but in order to preserve this mental picture undistorted, one must have an equally clear understanding of the mechanical aspects of acting. We admire the playing of a great musician like Paderewski or Kreisler, but we would not do so if they had not spent years of arduous work in mastering the mechanics of their art. Acting involves quite as much mechanics, and requires as complete mastering as does music. Incorrect timing or faulty tempo can ruin the playing of a part as completely as they would the playing of a sonata.

Perhaps the most important single phase of acting is listening. There is a great art to listening. The American actor, Joe Jefferson, once described acting by saying, "When I talk, YOU listen—and when you talk, I listen." To the actor, there are volumes of wisdom packed into that sentence; the difference, in fact, between the trained actor and the amateur. The professional player is always a good listener; the amateur rarely is. The most important part of an actor's work does not always come during his own speeches: it is just as important that he continue playing his part while somebody else is speaking. He may have heard the other player's speech a hundred times in rehearsal, and know it word for word—but unless he stays in character, and listens to that speech as attentively as though he were hearing the words for the first time, he will kill both his own work and that of his fellow-player. Listening

Continued on Page 44



Leslie Howard and Ann Harding, both amateur cinematographers, study up a bit on cameras

Don't Make Them Camera-Conscious

Says

Norman Taurog

Director
of "Skippy"

THE essence of directing is the knack of putting people completely at ease, yet at the same time persuading them to do what you want them to do. While there can never be a set of fixed rules for directing, there are many things which common-sense tells us we should do—and quite a few, too, that we should not do.

First of all, know what you want done. Make up your mind beforehand, so that, when you are actually ready to shoot, you will not appear undecided to your actors. With amateur actors, especially, the director should be a real leader: not "the thinker," but "the man who has thought." On the other hand, don't be so wrapped up in your preconceived plans that you cannot take advantage of unexpected opportunities as they arise.

But, just because you have formulated your plans, don't keep them a secret from the people who are to execute them. It won't lessen your dignity to explain to your players what is required of them—to tell them what it is all about; and they will be able to do it far better than they would otherwise. Besides—nobody likes to be classed as mentally inferior. In making a dramatic film, it is always a good policy to sit down and tell the story of the picture to your cast before you start shooting, and then, as you make each scene, be sure that each person knows what is to be done—and why.

There is a vast difference, though, between being sure your players know what is expected of them and rehearsing them to death. This is a point which many directors, both amateur and professional, have difficulty in grasping. Amateur actors especially cannot stand too much rehearsing; constant repetition rubs away the spontaneity of their acting. Therefore, my advice to the amateur director is to confine himself to one or at most two rehearsals. Then, if anything is not as it should be, he can say, "Well, that was pretty good. Now let's try it this way," and do it over again, with the players once more filled with enthusiasm. But—don't try it too often on the same scene!

In all of this, remember to be calm; don't get excited—and don't shout at your actors. It doesn't do any good, and often irritates and worries them. Besides, it destroys the impression of competent leadership which is the director's greatest asset.

For the same reason, tell your people what to do rather than pushing them into place. Actors are human beings, and should be treated as such; even in directing animals, you can't get natural results if you are constantly shoving your subject around like so much inanimate clay.

If you can't explain your point verbally, step into the actor's part and show him what you want him to do. On the other hand, in working with children, this is exactly the wrong thing to do; you must rely entirely on verbal explana-

**Norman
Taurog,
winner of
Motion
Picture
Academy
of Arts
& Science
Award for
the year
1931**



tion and the child's innate dramatic instinct. I have directed a number of pictures (such as "Skippy") with casts largely composed of children. In making them, I have found that if I attempted to show the child what I wanted him to do, I would not get what I wanted, for he would, monkey-like, imitate me. Instead, for instance, of getting Jackie Cooper as "Skippy," I would get Jackie Cooper's imitation of Norman Taurog as "Skippy." It is a far too common fault of all of us to underestimate a child's mental capacity; yet if a child knows what is to be done in a scene, and understands why, his natural sense for the dramatic will enable him to do it—and often better than any adult could possibly foretell. Remember, one of the most deeply rooted of all human instincts is the instinct of self-dramatization. In grown-ups, it manifests itself in the desire to attire oneself in more or less exotic masquerade costumes and lodge regalia; in children, in the thousand-and-one dramatizations of play. Have you not noticed, in the play of your own

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Story-Human Interest- Action....That's A News Picture!

Says

C. J. Hubbell

West Coast Manager,
Fox Movietone News

A NEWSREEL cameraman is essentially a reporter. The fact that he works with camera and microphone rather than with notebook and pencil does not alter this in the least; he is still a reporter, and he must "write" his stories according to the same requirements that apply to newspaper copy. A news story must first of all be news; it must contain human interest and novelty; it must be told briefly and clearly; and—in the case of the newsreel—it must have ACTION. In this respect, the addition of sound has not altered technique, though it has broadened our choice of subject-matter greatly.

News subjects offer the amateur movie-maker a perpetual opportunity to make films that are "different"—films that his friends will not yawn at; but to do this successfully he must adopt the technique of the professional newsreel man. By this I do not mean so much the professional's photographic technique as his reportorial technique. Newsreel photography is as a rule straight, commercial photography, for there is comparatively little opportunity for high pictorial artistry. It is, in fact, the type of photography that the average amateur is turning out all the time: technically satisfactory; even, clear and sharp, with good, straightforward composition and filtering, but relatively little attempt at pictorialism. Yes, the amateur who has passed beyond the novitiate need have no fears about the purely

photographic problems of newsreel camera work. But he has much to learn about camera-reporting.

Next, news pictures must tell their story completely and briefly. The picture itself must tell the story as much as possible without the aid of titles other than the inevitable introductory title. They must tell that story quickly, without any surplus footage, for no newsreel issue runs over 1000 feet (the equivalent, that is, of the 400 foot reel of 16 mm.); and that thousand feet must contain from five to seven or more COMPLETE stories. The newsreel reporter who shoots a lot of surplus footage is usually out of a job before he even starts!

News pictures must, as a rule, be gotten quickly. News events, like trains, wait for no man. Therefore the news man must be able to work fast and accurately. There can be no retakes at an explosion or fire! First, learn what your lens or lenses will cover at any given distance. Practice setting up and moving your outfit about so that you are accustomed to getting into action quickly. If you use a tripod, do as the professional does: extend one leg a half-inch or so more than you do the other two, and keep that leg in front. Then all that is necessary for a quick move is to take each of the other legs in your hand, put your shoulder under the head of the tripod, and walk off. When you reach your new set-up, lean over until that longer front-leg of the tripod reaches the ground; bring the other two legs back until the camera is level—and there you are! In doing this, by the way, it is a good idea to have the joints between the tripod-legs and head fairly tight, so that the legs can't flop around too freely.

There is scarcely a subject that can't be improved by the selection of proper backgrounds. If you can make them artistic or significant with relation to the subject of the story, so much the better. At any rate, see to it that there is nothing in the background that will distract the attention of the audience from the foreground-action. Also, it will often help if you can choose a background that offers some definite tonal contrast with the subject in the foreground.

Always get a little higher than your subject. When we wish to see a parade to the best advantage, we climb up on a box or take to a second-story window. Do the same with your camera—but don't go too high! The biggest parade in the world wouldn't be of much interest if seen from the top of the Empire State Building.

Also, always photograph a parade coming toward you. Let the people or floats do the moving, too, for it is seldom good to attempt to follow a section of a parade. Besides, with the large shutter-apertures commonly used in 16 mm.

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The Prince of Wales, recognizing that royalty is news, carries his own camera.

Putting "Teeth" in Your Pictures

by

S. H. McAfee, D.D.S.

Here's Dr. McAfee's set up, the title card representing the patient



FILMING of most any surgical procedure presents certain inherent difficulties. In an operating-room all photographic paraphernalia must be sufficiently out of the way, and unobtrusive; the photographer should conform, as nearly as possible if not wholly, to operating-room routine—wear sterile gown; keep out of the way, touch nothing in the room—except his equipment and possibly the floor. Camera, equipment, lights and 'scenery' cannot be shifted around at will, nor the "actors" bawled out through a megaphone by a director, nor can any "test" shots of the actual operation be made beforehand, nor any scenes therein "repeated" for better photography, or an account of bad acting.

Reasonable precaution must be taken that no electric plug, wire, switch, connection, light or anything else, produces any appreciable "arc" or spark, as there is some possibility of gas explosion. For this reason I would say the use of any form of arc light would be contra-indicated in a small operating room during such anesthesia.

I will briefly describe the making of a recent picture entitled "Surgical Preparation For a Maxillary Artificial Denture And The Denture Placed."

"Locale"—Small surgical operating room in a local hospital.

"Scenery"—Patient lying on operating table, head somewhat elevated.

"Action"—Administration of general anesthetic by special tubes-in-the-nose method permitting open, unobstructed mouth; removal of several remaining teeth, surgical reduction of bony interferences, curretting, smoothing, suturing, etc. Later scenes showing the finished case, also scenes of the patient's face and mouth conditions, X-rays prior to operation, plaster casts, etc.—were all filmed afterwards in to the moving picture ad lib.

Lighting—One 500 W. Kodalite on stand, 5 feet elevation, 6 feet distant at left; one 1000 W. Kodalite on the opposite side, 7 feet elevation, 6 feet distant; these for general lighting; one 500 W. Eastman medical spot-light (principal source) 8 feet distant, slightly to right, focused on the patient's face, giving a bright circle of light slightly larger than the face and lighting up the INSIDE of the mouth. These three lights, all portable and adjustable, were connected by their rubber covered cables to near-by plug-in wall sockets, first making sure the house line would carry the total load—which was not excessive. There was a large window back of the camera which admitted daylight, varied continually by floating clouds. With ample artificial

light such changing daylight had best be eliminated—otherwise the exposure would need slight variation—a troublesome procedure in such a set-up. However I did not eliminate it; did not vary exposure and no doubt the latitude of the film and the reversal development machine took care of it.

Camera Set-Up—A substantial table large enough to hold steadily a Bell and Howell tripod, at full height, was placed on the floor at the foot of the operating table; a Filmo D-A Camera (with turret and critical focuser) and BGH alignment gauge were mounted on the tripod. This placed the camera about 8 feet from patient's slightly elevated head, and the camera at sufficient elevation to bring the axis practically vertical to the plane of the 'scene' or field of operation. I (the cameraman) stood on a box back of it, but not touching the table.

Lenses used—One inch f 3.5 (focusing mount) for a few general shots, and a 3¾ inch f 3.3 telephoto (focusing mount) for taking practically all of the operating procedure.

Everything was set up, tested, the view approximately 'found,' lenses approximately focused, exposure determined with photometer, before the patient was brought in the operating room.

We previously agreed that the patient was best kept as nearly as possible in the same position, and as to about what we were going to film. The cameraman, being a dentist, familiar with the procedure, helped some. The patient was then brought in. The camera was now exactly framed on the mouth, (V.F. alignment gauge position) moved over to critical focus position on the gauge and the two critically focused on the actual scene. The camera was then shifted to the lens position on the gauge (which is about 1¼ inches to ONE SIDE of the view-finder on my Filmo camera) and, while not essential to do so, with the camera in LENS position I carefully looked through the view-finder and set up an "imaginary" centre, which, of course was about 1¼ inches to the left of the lens' centre. This imaginary centre happened to be the corner of the patient's mouth. If the camera setting on the alignment gauge is correct and the works not moved, it isn't necessary to look into the view-finder while filming—and I seldom did; just carefully touching the camera button when necessary. If you DO look in the view-finder don't make the mistake of centering with the finder, otherwise the picture, taken at that distance, will be off-center to the right—especially so with a telephoto lens. The camera should be carefully rewound at every opportunity and operated without mov-

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Imagine My Embarrassment—or Mistakes I Have Made

by
Franklin B. Skeele
Amateur

YOU may recall the Japanese lad who collapsed within a few feet of the finish line in the recent Olympic marathon classic. I sat within a few feet of him, poised for as perfect and dramatic a shot as ever registered on my camera's retina. Newsreel photographers would have paid a good sum for such a "scoop." But—imagine my embarrassment to find that the projected film showed twenty feet of my left thumb. It was such a simple thing to do! But it did happen and the incident is gone forever because I did not form the habit of holding my camera properly.

Then there's the chin-type picture which cuts off the top of our subject's head. Most of us know that with close-up portraits we should aim slightly higher than from a distance. But, it took many feet of good film to impress this simple error on my conscience.

Every roll of film we buy contains a slip warning us about panoraming. Yet we all do it and probably always will. My mistake has been that I went too fast instead of going at a turtle's pace. If done on a tripod much of the objectionable screen vibration will be lessened. Too, it's only natural to "pan" from left to right for that is how we read. Occasionally I wanted the top of a tall building and found it better to "pan" down again, rather than leave my audience in mid-air. By rehearsing every panorama before pushing the button it helped to make me realize that I must go slower.

In reviewing some 6000 feet of amateur film recently, the most common mistake, aside from unpardonable panoraming, was in not taking scenes long enough. A diver,

for instance, poised gracefully, dove; but the button had been released before he hit the water. One good rule to follow would be to always complete the action, whether it's a foot race to the finish or a high-jump over the bar.

I have found that short shots tend to change the tempo of my theme. They are necessary at times just as is the short crisp sentence in a climax.

I used to wonder why friends lost interest in my showing and made "talkies" among themselves in a supposedly silent masterpiece. Then I began to reason that although the mechanics of lighting, filtering, composition and angles, had been fairly well taken care of, there was no logical sequence. Come to think of it, I had never cared much about reading stories myself without a theme; why then should my friends "ah" and "oh" over my dramas without plots.

Here is what I showed them when they yawned: a group of typical summer beach scenes. The youngsters were diving in the surf. Junior was shown on the end of the pier with his pole. Then a seagull shot followed with one of a fishing boat and a filtered sunset scene.

Re-arranged it ran:—One of the youngsters scratched the title on the sand. Then several scenes of their playing in the surf helped to introduce the setting. One of them came up from his dive and was made to remark with a title, "Help! I've lost my ring." Then as others were shown diving they were made to appear as though looking for it. Even the seagull scanned the beach for the ring as did the boatmen. The sunset here gave a chance for the day to close logically. "The Next Day" brought us to Junior's scene on the end of the pier. Up comes his catch and he finds the ring (previously planted in the fish's mouth). The plot is simple and perhaps child-like, but at least it gave an excuse for the scenes and brought a smile from the audience.

I find that it is not always convenient to arrange a theme for every roll of film. Yet it is good to have some excuse for combining a series of unrelated shots. By making a News Reel with explanatory titles, the problem is solved.

Some of my best pictures have been dug out of scrap film that been put away by mistake as n.g. In one instance it happened to be a series of my youngsters from baby-carriage days, through roller-coaster-hood and now through school days. The only extra scenes necessary were a series of the family taken on the front porch looking through the old family album. I took some thirty feet of this to strip in at intervals for variety in the theme to follow. Projected, it shows the book being opened and as its pages are turned the scrap-film shots are injected. A close up of a cake with one candle saves a title; two candles follow in proper place, etc. This is a picture that can be added to as the years roll by, for it is a sort of "unfinished symphony" and will mean much in future days.

I used to explain everything with titles. It was a mistake. In fact, it was like telling a joke to someone and then explaining the point. Instead of saying "Early Next Morning . . . so and so" I learned that a milk bottle on the front porch indicated the same thing. "Three Hours Later" became more interesting by showing a clock with the hands turning the hours. Subtle suggestion often gave my pic-

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The cloud above the sun is just the author's thumb.

Cylinder Distortion for Special Effects

by

Dr. J. S. Watson, Jr., A.S.C.

SITUATIONS arise in motion picture taking which suggest the desirability of a device for distorting the photographic image. Perhaps the composition of a view does not quite fit the proportions of the camera aperture. The camera itself does not have the adjustments of the still camera. A more suitable angle of view cannot be found. Yet the scene would look better if it could be spread laterally, so that there would be less space at the sides, and compressed vertically, so that more was included at top and bottom.

This would be a highly respectable reason for using cylinder distortion. The slight increase in the apparent breadth of trees or mountains in the scene would probably not be noticed, and art would continue to conceal art in the good old way.

There are, however, photographers who would be more than willing frankly to exaggerate certain features of the subject if they could. To such unscrupulous persons cylinder distortion offers many opportunities for special effects. Buildings, waterfalls, model scenes, and even actors can be made to take on new proportions, and appear more threatening or more ridiculous, as desired. Even the movements occurring within the scene can be emphasized. The swaying of branches in a strong wind is more alarming if magnified laterally or diagonally along their line of travel. Storm waves appear more dangerous if magnified vertically.

Cylinder distortion devices have long been in use. There is a very ingenious cylinder system on the market for producing amateur wide films. Several years ago the Bell and Howell Company introduced a cylinder attachment for their Filmo camera. It was called the 'Lens modifier' and was extremely powerful, being intended for weird or comic effects. It is convenient, however, not to be limited to one power, as each new situation generally requires something a little different from the last. The device described in this article is easily made up in different powers. It is intended to be used directly in front of the regular lens of the camera.

The principle of a simple cylinder system is the same as that of the Galilean Telescope. A plus cylinder occupies the objective position, while a minus cylinder of greater



A 35 mm. enlargement of a cylinder distortion picture

power takes the place of the telescope eye piece, as close as possible to the camera objective. The axes of the two cylinders must coincide and so must their focal points, the separation between the lenses being the difference in their focal lengths. The magnification produced is equal to the focal length of the plus lens divided by the focal length of the minus lens.

With these facts in mind it is easy to calculate any type of system desired.

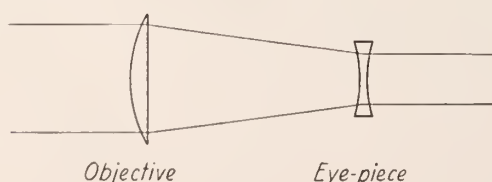
$$\begin{array}{rcl}
 \text{Focal length of plus cylinder} & = & 100 \text{ mm.} \\
 \text{Focal length of minus cylinder} & = & 50 \text{ mm.} \\
 \text{Lens separation (distance between two} & & \\
 \text{cylinders)} & = & 100 \text{ mm.} - 50 \text{ mm.} = 50 \text{ mm.} \\
 \text{Magnification or distortion produced} & = & \frac{100}{50} = 2
 \end{array}$$

Systems giving magnifications of two and more entail disadvantages not found in weaker systems. If strong lenses are used, increase of aberrations prevents a sharp image from being formed on the film. On the other hand, if weak lenses are used, the separation between the lenses must be increased and the objective lens, situated at the front end of a long tube, embraces only a narrow angle. In other words the device will cut field on any but a very long focus camera lens. Cylinder systems with magnifications up to 1.6 and separations of about 50 mm. give satisfactory definition and should not cut field when used in front of a 1 inch lens on a 16 mm. camera.

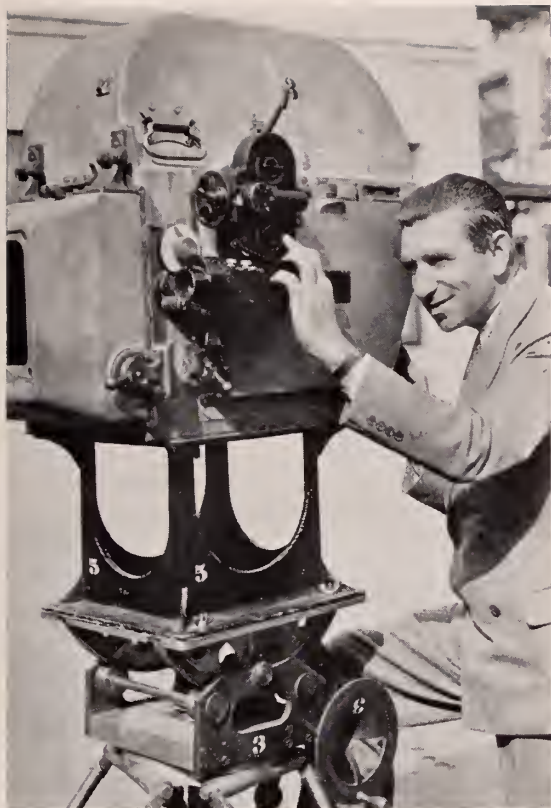
The easiest cylinders to obtain are probably the standard spectacle lenses of about 47 mm. diameter, which are stocked by optical wholesalers in a great variety of powers. The powers are stated in diopters (D), one diopter being the reciprocal of a focal length of one meter. A 10 D lens would have a focal length of 1/10 meter or 100 mm.

The tube that holds the cylinders should be adjustable for length and should permit one of the lenses to be rotated with respect to the other. This is necessary in order that

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GALILEAN TELESCOPE SYSTEM.



John Arnold, A.S.C., executive cameraman for Metro Goldwyn Mayer Studios, finds he can duplicate many things with the amateur camera that he secures with the professional equipment

It's Not Just the Camera!

by

John Arnold

President American Society
of Cinematographers

THESE seem to be a large group of amateurs who feel that the reason they don't get good pictures is because they haven't an elaborate camera-equipment; or that, conversely, the reason why the professional gets fine photography is because he uses a \$10,000 Bell & Howell or Mitchell studio camera. To all of which the only possible reply is a polite variation of the phrase, "applesauce"; it is the man behind the camera that counts—not the box itself. Some of the finest still pictures ever hung in a salon have been made with box-brownies; some of the most superb cinematography that I have ever seen was revealed in one of the prize-winning films of the AMERICAN CINEMATOG-RAPHER'S Contest—made by an amateur with the simplest of home movie cameras. By the same token, I have seen men who didn't know take the finest cameras out—and

bring back films that an amateur would be ashamed of. Its all in the brain of the man at the crank!

Cinematography can never be reduced to a cut-and-dried set of rules. The manufacturers of our amateur cine cameras have come as close to it as is possible, for their cameras are so cleverly designed they can almost think for the user—if he will let them. But even the best cameras and the most detailed instructions can't provide against all of the unusual situations an enthusiastic amateur can run up against. Take, for instance, the problem provided by a girl in a red dress, photographed against a dark green background. Normally, both the dress and the background will appear dark—almost black—on the screen. How are we to separate our foreground and our background? The simplest thing is to change one or the other—but that can't always be done. So let's see what a professional cameraman might do when faced with such a problem. The first and most obvious thing is to use a filter which will lighten the red dress to a pale grey, without having an appreciable effect upon the leaves. Panchromatic film (either regular or SuperSensitive) and a red filter will do it nicely. With Regular Pan, use a 3-A filter; with SuperSensitive, a 29-F—and the deed is done. But, unfortunately, if we lighten the dress in this one scene, and don't (or haven't) in the other scenes in which that same dress figures, we will have gotten out of one difficulty only to get into a worse one. So, what else can we do? Why not put a light outline around the dress and the girl? That will separate her from the dark background very effectively. Here's how we do it: simply have the light come from behind the girl, and have the lens of the camera well shaded. Simple, isn't it? And very effective, pictorially and otherwise. If we want to do it really well, we can use a couple of reflectors to throw some more light onto the dark side of the subject—the one toward the lens, in this case—giving us a lighter subject against a dark background, with a striking rim-lighting around the subject.

Now, on the other hand, say we have too much contrast in our picture. What can we do now? That depends upon the kind of contrast we are faced with: very often, if the contrast is principally one of color, a green filter—the 56-B or one of the new X series—will soften the contrasts considerably; if, on the other hand, the contrast is primarily in the lighting, the various neutral density filters will tone the harsh contrasts down appreciably. It is often a good policy to use a color filter and a neutral density filter in combination: I very often use a K-1 filter and a 50 Neutral together, (with Panchromatic film) on my own Filmo. The new 3-N-5 and 5-N-5 filters, which are merely the familiar Aero 1 and Aero 2 filters combined in each case with a 50 Neutral Density filter will do approximately the same thing on SuperSensitive film.

There is another question amateurs are constantly asking me—and every other professional cinematographer: "How can I get night-effect scenes by daylight?" Again the answer is, "with a filter." If you are using regular Panchromatic film, simply combine a 23-A and a 56-B filter—and underexpose. The degree of underexposure is something that depends upon the effect you wish, for by this rather extreme over-correction, and wisely modified exposure, you can get a range of night-effects running from that of a bright moonlit night to the darkest pocket you can I get night-effect scenes by daylight?" Again the facts can be had with a 72 (Gamma) filter. And—a word to those who use the negative-positive system: tell your laboratory man you are shooting for night-effects; otherwise he will more than likely force the development of the

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Next Month . . .

Home Made Gadgets . . . by Dr. S. H. McAfee
 . . . Things That Will Interest the Amateur.

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Imagine My Embarrassment

Continued from Page 33

tures a touch of professionalism such as stamping feet to imply anger; tip toeing to symbolize silence.

I used to think that the making of titles was only for advanced amateurs. Since, I find as much pleasure in this as in pushing the button itself. Negative film costs about one sixth as much as regular positive film. By drawing with black ink on a dull white card, I get the reversed effect intended, e. g., white lettering on a black background. Negative film requires a slightly greater exposure due to its slower action. A 3.5 lense, with two ordinary 110 volt lamps for night use, should have the aperture at 3.5. If the card has too glossy a finish, the letters will not be sharp and clear. By taking away the light a fade-out is easily secured. Also be sure to give instructions to have the film developed only; otherwise the laboratory will make a regular positive and negative print.

Another early mistake of mine was timidity. Will Rogers once sat on horseback watching a polo game nearby. I took 20 feet and it might just as well have been Joe Bush for no features were visible. With a little nerve I would have caught that famous smile that the world loves to see and my audience would have enjoyed watching him chew gum. A good photographer has to go places; be kicked out occasionally; edge to the front of every crowd and not be afraid of "no man's land." After all, your audience wants to see everything that happens, to be close to the scene just as though they were there instead of you.

I used to think dealers sold film and equipment only. Rather their business is to help you find more enjoyment of the film they sell to you. They are experts, will give many suggestions and save you many feet of wasted pictures, which at six cents per foot is only good business.

One last mistake—and important; don't think as I did that you could keep up on movies by simply reading books. Such magazines as "The American Cinematographer" should be studied regularly. You learn of the latest short cuts, of developments of the industry; receive many final suggestions for the improvement of your pictures.

There are few hobbies that offer such an opportunity for originality and self expression as cinematography. "You push the button," but the man who does the "rest" can only develop what happened when you did the "pushing."

Trend of 16 MM. Film

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this projector will be ready for the market early in 1933, simultaneous with the announcement of the RCA and Kodak 16 mm. sound-on-film cameras.

Eastman Developing Sound Camera

EASTMAN Kodak Co. has developed a 16 mm. sound-on-film camera using the newly adopted S. M. P. E. standards, which is in the process of ironing out the kinks prior to "tooling up" for production. This camera is licensed under RCA-Victor patents as well as the subsequent projector Kodak will no doubt produce.

Uncle Sam Goes Sixteen

THE U. S. Signal Service have recently completed two sound productions at their Washington D. C. studios. The subjects were Training in Chemical Warfare, and were filmed as silents at Fort Monmouth, the sound accompaniment being done in Washington. Captain A. H. Jervey, U. S. A. Signal Corps, directed the production, which deals with practical war problems and use of chemical gases in warfare. Arrangements are being made to distribute these film on 16 mm. size sound on the film standard to the various army post of eight army corps areas.

MORE PRIZES ADDED TO AMATEUR CONTEST

ADDITIONAL prizes totaling a little more than \$1,200 have been added during the past month to the AMERICAN CINEMATOGRAPHER Amateur movie makers contest.

Contributions from the Victor Animatograph Company of Davenport, Ia. add \$1162.50 in equipment and two cash prizes given by William J. German, vice-president and general manager of J. E. Brulatour, Inc., distributors of Eastman 35 mm. film add another \$50.

Detailed description of these equipment prizes which now total more than \$2000 are as follows:

VICTOR ANIMATOGRAPH CORPORATION will present a Victor Model Five Camera, complete with F 2.9 1" Hugo Meyer Lens and No. 5 carrying case for the film which, in the opinion of the judges would most nearly qualify for a major prize except for insufficient photographic quality, it being understood that the lack of photographic quality resulted, not from carelessness but from the type or condition of equipment used, either 16 mm. or 9½ mm. It is further specified that the film receiving this award shall not have been awarded any other prize. Value of this prize \$202.50. For the best film from each state in the United States not awarded other prizes, the Victor Animatograph Corporation will give a \$20 certificate of credit which may be applied to the purchase of any new Victor camera or projector up to and including January 15, 1933. These certificates of credit will be honored by all authorized Victor dealers. Total value \$960.

WILLIAM J. GERMAN (J. E. Brulatour Inc.) will give a cash prize of \$25 for the picture having the best composition. He also gives a cash prize of \$25 for the picture considered the most ideal home movie, total \$50.

Other equipment prizes which have already been announced are as follows:

BELL & HOWELL COMPANY will present to winners who have made their pictures with a Filmo: 1st—A choice of a Filmo 70DA camera listed at \$280.00 or a Filmo Model J. L. Projector listed at \$298.00. 2nd—Choice of Standard Cooke Telephoto Lens, values \$60.00 to \$95.00.

EASTMAN KODAK CO. for finest example of photography in any out-of-doors picture whether it wins cash prize or not and without consideration of story subject: A Model K Cine Kodak, with a f.1.9 lens complete with carrying case, priced at \$150.00.

MAX FACTOR MAKE-UP STUDIOS will present one of the famous Max Factor Make-up Kits, completely equipped, to the winner of first prize.

HOLLYWOOD FILM ENTERPRISES, INC., offers to the person or Amateur Club located in California, who enters the best 16 mm. or 9½ mm. picture from California, regardless of whether it wins cash prize or not:

A Model B Cine Voice, Home Movie Talking Picture Machine complete with carrying case, priced at \$129.00. May be attached to all projectors.

HOME MOVIE SCENARIOS, INC. To winner of first prize, one scenario (choice), one HMS Matte-box, choice of any HMS filter and one HMS scene slate. To winner of second prize, one HMS matte-box and choice of any HMS filter. If first prize picture is made from an HMS scenario they give an additional cash prize of \$100.00. If second prize picture is made from an HMS scenario they will give an additional cash prize of \$50.00. If third prize picture is made from an HMS scenario they give an additional cash prize of \$25.00.

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CERTIFICATES OF MERIT. Certificates of merit will be issued by the AMERICAN CINEMATOGRAPHER to those individuals who showed outstanding accomplishment in the different phases of motion picture making. These will cover the entire range of angles involved and in addition a certificate for what will be considered the Ideal Home Movie. In many instances these certificates will be awarded to individuals whose work will have indicated a greater achievement in that particular endeavor than was displayed in some of the four prize pictures.

It was felt by the judges after viewing many fine pictures and discovering a high degree of efficiency in the different angles of picture making as was displayed by many that this contest should go beyond the contest nature and reach out so as to give credit for individual merit. To do this the Certificate of Merit was devised. These Certificates of Merit represent the greatest honor that could be bestowed upon any amateur coming as they do from the camera masters of the world, the American Society of Cinematographers.

NEXT MONTH we will publish in detail the arrangement for next year's awards. The manner in which the awards will be given and their nature. While the complete plans have not been matured the indications are they will be broader in scope so as to take in all phases and classes in their recognition.

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Don't Make Them Camera-Conscious

Continued from Page 30

children, that a child almost never plays as himself, but always impersonates some other character—an Indian, a fireman, a cop, or a gangster? "Tom Sawyer," always dramatizing himself, whether as a Crusader, an accomplice at a noble prisoner's evasion, or as a steamship, is typical of childhood's dramatic urge. The wise director is the one who will take advantage of this in making movie-acting a joyous game for children, and who knows how to free the same impulses of adults from the inhibitions of convention.

But, despite this inborn dramatic instinct, children—even such talented ones as Jackie Cooper—will sometimes sulk, and feel that they "don't want to play." In that event, the promise of some reward is often a powerful inducement. But—if you promise a child something, keep that promise no matter what happens. For a child never forgets a broken promise. If you tell him, "if you do this for me, I'll give you a penny—or a nickel—or an ice cream cone"—live up to your word! If you don't—if you break faith with him once, he'll remember the broken promise the next time, and refuse to play. I suppose I have directed as many children as any other man in the industry, and with equal success; half of that success, at least, is due to the fact that, no matter what happened, I never permitted myself to make a promise that I did not fulfill. Often, during the making of "Skippy," for instance, I would tell the children—Jackie Cooper, Bobby Coogan, Jackie Searl, Mitzi Green, and the others—that I would give a dime to the one who gave the best performance that day. And how they would work for that dime! A dime was something that they could understand—something that was their own, apart from the hundreds or thousands of dollars a week which they received, but which their parents handled for them.

Up to a certain age, children are practically oblivious of the camera; then they suddenly become aware of its presence. And there is nothing more disappointing than a camera-conscious child. With the amateur, the remedy is a telephoto lens. If you can add to the telephoto lens a remote-control, your problem is even easier, for you can set the camera up on a tripod, some distance away from your subjects, carry the remote-control with you, and then, in the guise of a rehearsal, get your scene. The plan isn't such a bad one, either, when working with adults—particularly camera-shy ones. Try it!

Speaking about children, I've noticed that many amateurs (and some professionals) make the mistake of dressing children up in miniature adult attire, and making them do imitations of adult stories and actions. To my mind,

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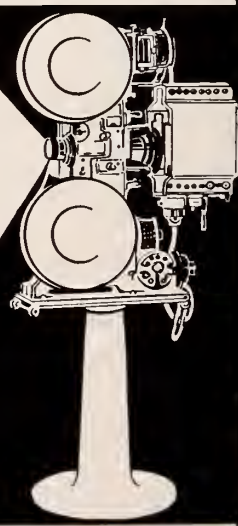
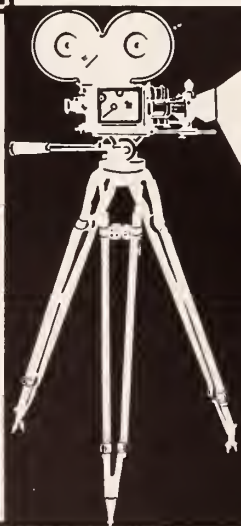
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this is bad. It robs the children of their greatest asset—naturalness. It makes them look and feel ridiculous. The best child pictures, whether they are stills or movies, professional or amateur, are the ones which present them as children, doing the things children naturally do in the way that is natural to children. I have taken hundreds of Graflex stills and many 16 mm. reels of my own baby; the best of them are the natural, unposed ones. These are the most characteristic; and it is such little poses, expressions and movements which show our children as they really are, that we parents really want. To perdition with the stiff, posed “baby portraits” and “baby movies” that show the form but not the character!

Opinions differ as to whether or not the amateur director should confine himself entirely to directing, or handle both that and the photography. In most cases, I believe the latter to be the happier arrangement. It is inevitable in the making of family films, and, except in the case of very large groups, by far the most efficient in handling group or club productions. The man at the camera usually has a better idea of what should be done, and how, than anyone else in the group; accordingly, he is the natural one to undertake the duties of directing the production. If his ability is not equal to the task, it is hardly likely that he would be equal to handling either of the two assignments individually. By the same token, if the amateur director is not familiar with the use and requirements of the camera, he is in grave danger of making many of the blunders made by some of the professional directors who came to Hollywood from the stage with no appreciation of the nature of motion picture making; and the amateur director does not have the benefit of a trained, picture-wise staff of cameramen, assistants and actors, as does the professional. Therefore, by all means, let the amateur director be the photographer as well.

But, whoever he is, or whatever he undertakes, the amateur director should remember this above all else; as soon as the players in any film evidence any trace of camera-consciousness or direction-consciousness, the director has failed. For no matter what sort of a film it may be—whether it be merely a record of the baby's first steps or the most pretentious of dramatic productions—the secret of success is complete naturalness. And it is the director's duty, first, last and always, to see to it that everything that appears on the screen is natural—to put his actors at ease from the start, and to keep them that way to the finish.



Blend Them . . .

Continued from Page 27

arouse a theatre full of people far more than the finest scenic of the Victoria Nyanza—and if it is followed up with an intimate shot of a gorgeous palace, in a corner of which a ragged, hungry Chinese girl is petting a scrawny kitten, the audience reaction will be far greater than anything the ruins of Chichen Itza could create in them. What I am trying to say is that the pictures which our audiences “eat up” are those wherein the scenic and the commonplace are so blended that they create an illusion of real, living, breathing people set down in the midst of their proper surroundings, on whom the audience has sneaked up and is getting a forbidden glimpse at first hand.

But don't let any aspiring amateur, or professional cinematographer get the idea from my words that he must go away off into remote countries to find interesting subjects. They are everywhere.

All you have to do is to find out how to tell these things so that the audience will never even smell the castor oil—will never suspect that it is being educated against its will.

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Cylinder Distortion for Special Effects

Continued from Page 34

the final adjustments of separation and axis may be made with the device in position on the camera. A simple mount consists of two short pieces of brass tubing of about 45 mm. diameter, one of which fits fairly tightly inside the other. The lenses are attached over opposite ends of the combined tube with tape or retaining rings. A rough adjustment may be made by simply looking through the tube at some object and rotating one of the lenses until the scene appears sharp. The device is held in the optical axis of the camera lens by an extension arm similar to that used for the sun-shade. Theoretically the camera lens should be set at infinity, but often a different setting sharpens the image. With the axes of both cylinders vertical, magnification is produced in the horizontal dimension of the image, and vice versa.

If the point of focus in the scene is nearer than 25 feet a spherical auxiliary lens should be attached to the front of the plus cylinder. This keeps the system afocal and gives a sharp image for near objects. The focal length of the auxiliary lens should be equal to the working distance. Thus if the object to be photographed is 6½ feet from the cylinder objective, an auxiliary lens of plus 0.50 D (focal length 2 meters) is used.

A set of cylinder distortion devices ranging in magnifying power from 1.2 to 1.6 will meet most requirements. More convenient is the variable magnification device invented by Mr. Scott Sterling in 1928. This will give any degree of distortion from 0 to 2 by simply turning a handle on top of the mount. The degree of distortion can even be changed continuously while the camera is running, an effect which is at the least peculiar. This device unfortunately is rather complicated and difficult to adjust, but the two element system described should offer no special difficulties to the amateur. Here are some formulas giving different magnifications.

For magnification of 1.5

plus 8.00 D

minus 12.00 D

Lens separation = 41.67 mm.

For magnification of 1.66

plus 9.00 D

minus 15.00 D

Lens separation = 43.34 mm.

For magnification of 1.2

plus 5.00 D

minus 6.00 D

Lens separation = 33.33 mm.



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Forerunners of Amateur Film

Continued from Page 25

bulky and expensive camera, they led the victorious march of substandard film. Very soon after the introduction of their original Model "A", they offered far more improved apparatus.

(EDITOR'S NOTE: 16 mm. apparatus was actually introduced almost, if not quite simultaneously by the Kodak Co., Bell & Howell and Victor. Mr. George Beyer of the Victor Animatograph Co. has, in fact, informed us that Dr. Victor's first 16 mm. "Animatograph" antedated the Cine Kodak by several months. This first "Animatograph" was a redesign of a previous 17½ mm. model, and was box-form, hand-driven, with a fixed-focus f:5.6 lens. At any rate, it is incontrovertible that the Cine Kodak, the Filmo and the Victor were the first 16 mm. cameras, and appeared so close together in 1923-24 that it is very difficult to definitely state which was the first.)

In 1926, when the 16 mm. Cine Kodak size had already conquered considerable ground, Pathe reappeared with a new film, called the "Rural." It is 17½ mm. wide and makes an especially economical use of the film surface. This film maintains a monopoly in the French educational system.

But there is still no standstill—and if any of us thought that 16 mm. would prove the final standard for amateur cinematography, we were badly mistaken. Several years ago the Kodel Electric and Manufacturing Co., a large radio concern in Cincinnati, Ohio, produced an apparatus using 16 mm. film, but which quarters the film, thereby saving approximately 75%. The mechanical movement of the camera and projector not only move the film vertically, but horizontally as well.

(EDITOR'S NOTE: For a complete description of the Kodel system, see THE AMERICAN CINEMATOGRAPHER, November, 1929; also Vol. I, CINEMATOGRAPHIC ANNUAL. This system, while extremely interesting in theory, appears to have lapsed into desuetude due to numerous technical deficiencies.)

Strange as it seems, the Kodak Co. has recently taken a somewhat similar step—and gone even further. They offer now an 8 mm. film which is obtained by splitting the 16 mm. film in the middle, after the exposure. During the exposure only one half of the 16 mm. film is exposed; after the film has gone through the camera once, it is turned over and the other half exposed. After processing, the 16 mm. film strip is cut lengthwise, and spliced end-to-end, creating an 8 mm. film strip perforated on only one side. This 16 mm. film, however, has twice the number of perforations that ordinary film has. It is a strange coincidence: the first narrow film for the amateur was made by dividing standard film—and now after nearly four decades the 16 mm. film which has conquered the world is itself divided to form a new amateur standard. This has been made commercially and technically possible, however, only as a result of far-reaching progress in photo-chemistry, optics and cinemechanics. The 8 mm. image does not show any grain, is perfectly sharp, and the projection as steady as the standard 35 mm. film.

As we have seen, substandard film is still in a state of flux. Our space has permitted the mention of only a few of the more outstanding narrow-film systems which have actually matured, without digressing to consider the many others which have never progressed beyond the stage of discussions, patents or experiments. However, substandard film is definitely here, for both the amateur and the professional. Regardless of any future developments, its present importance cannot be doubted, its future is unquestionably secure.

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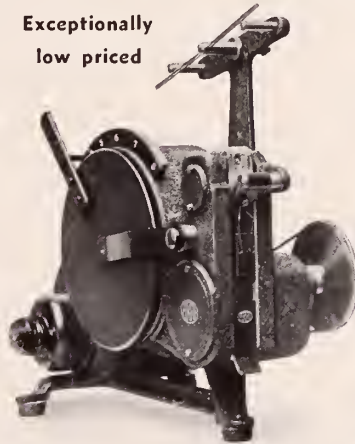
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Editing is Easy When . . .

Continued from Page 26

drances, suspense and finally achievement that will give the hardest hearted person in your audience a kick. Just to shoot the baby crawling on the floor means nothing. Perhaps to you, because you are the "proud parent," but not to anyone else. Putting a bit of a story in it you are going to find a greater pleasure in achieving a better subject and at the same time you have the history of your baby crawling.

There must be an idea, there must be a story, no matter how slight before you have a picture, because after all a motion picture is a story written in pictures instead of type.

The close-up is an important part of a story—not to be over-done of course, and not to be under-done. You are coming to climax of a situation, you can give it no greater punch than a close up. You might work up to it from a distant shot, to a three quarter, possibly back to the distant shot again and then into your close-up for a fine dramatic effect. The mixing of these scenes takes more than just the desire to use certain shots you have taken. It takes judgment. It takes a sense of the dramatic, of what entertains, of what the reaction of the human being will be. They cannot be used according to a certain formula. They must be handled judiciously, wisely and effectively—but they must be used. As a general rule the amateur picture contains too few close ups, possibly because they have not been taken. So take close ups. Remember—they can not be added in the cutting room if they have not been taken.

A close-up projects that character, that piece of business right out into your audience. It becomes a part of them. They cannot get away from it. It fills the entire screen, they are conscious of nothing else in that picture, but that piece of business that character, or the emotion you wish to convey.

A great deal of your editing can be done with the camera itself. This will develop in some to a greater degree than others. We even find it among the professional cinematographers. Some of them watch their exits and entrances which are important in a story such as the studios make. Others are not so inclined to give these close attention. The best cameramen make the jobs of the editor easier, make for better pictures, a finer piece of entertainment, perhaps that is the reason they are great cameramen.

In view of the fact that editing is the last step in the offering of a picture, I am sure that if I were to expose film I would first have something very definitely outlined, as complete a story as I could conceive—and conceived with the camera in mind, so that when the job of editing came around, I would have the proper material and material that would logically fall into its place. Learn to let the camera do a great deal of your editing.

**Be Yourself**

Continued from Page 28

girl on the screen. The two may be as far apart as the two poles, yet that makes no difference.

For the duration of that picture Ann Harding merges into the character of another and attempts to make her natural and understandable in the light of her own experience and ability. That is how all acting is accomplished. You visualize the character of another and render it honestly, bearing in mind that to do so you must be honest with yourself.

Again I say, don't try to be greater than the personality you are portraying. That is fatal. It leads to these ludicrous over-exaggerations I warned against.

If you want to learn the art of acting try being yourself. It really is the only advice worth the giving.



and how to use them . . .

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Learn to Listen Well

Continued from Page 29

may well be compared to fencing. The slow-motion camera shows that there are three distinct motions to a thrust with the sword: first, the sword is pointed; second, the arm extended; third, the lunge itself. These three phases actually blend smoothly into each other, and occur so quickly that to the eye they appear like a single movement—but each move must in itself be complete and perfectly executed. It is the same in acting: first, one hears what the other player is saying; second, he considers it; third, he delivers his reply. If the action is to be natural, it must—no matter how quickly it is performed—include these three phases of hearing, reaction and action.

The amateur actor is prone to forget all this, and to consider acting as merely a matter of delivering his own speeches and pantomime effectively. He is in character as long as he is actually speaking or doing something; but as soon as the action shifts to someone else, he slips out of character and becomes merely a man waiting to begin acting. Such playing will spoil the finest scene ever written—no matter who the other players may be. And if good listening is important on the stage or the audible cinema, it is vital in the silent film, where the audience's attention is concentrated upon the action rather than upon spoken words. The next time you go to the theatre or to the cinema, study the way the players listen to each other. The greatest actors are invariably fine listeners.

There is a subtle distinction, of course, between listening well and listening so exaggeratedly that one interferes with the work of the other player. It is possible to listen so demonstratively that one attracts the attention of the audience from the speaker, and causes them to miss some important words or actions. This is "bad theatre"—and bad manners as well. Yet I doubt if the average amateur is in any great danger of falling into this pitfall. Far better, at any rate, for the amateur to listen too well than not well enough!

Another important factor is timing. A good actor is able to tell as much by his pauses—or timing—as he does by his actual words and acts. The amateur actor all too often merely rushes through his lines, oblivious of the eloquent pauses that a professional would employ. It is not always what you say so much as how you say it.

Still another important consideration is to make the audience do part of the work. No audience that either the professional or the amateur is likely to face has so low an intelligence quotient that it must be shown everything. Even children appreciate appeals to the imagination. The actor's problem, however, is to differentiate between legitimately appealing to the imagination and underplaying his part; sometimes this distinction is very finely drawn. In one situation, turning one's back upon the audience may be the crowning artistic touch; in another, a consummate blunder. To the amateur, therefore, I would say, when in doubt—overact. The amateur does not have the years of experience with audiences that the professional can call upon for guidance. The amateur, once he has mastered the physical requirements of his role, and understood the mental ones, had best cast aside all inhibitions and "let himself go" completely. There is little danger that he will let himself go so completely that he will over-play his part.

Tempo is a rather intricate matter, but one which the actor must master. If you will study performances of the same play by two different companies—one professional and the other amateur—you will find that one of the most essential differences in the two performances is that of tempo. The professional eliminates waste movement, and keeps the play moving along quickly and consistently; the amateur is likely to do a lot of unnecessary work, which slows down the tempo, and makes it jerky. The professional tempo is almost invariably faster than that of the amateur.

Moreover, different types of drama require different

Continued on Page 46

2

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Learn to Listen Well

Continued from Page 44

tempos. So do different characterizations. Boris Karloff's characterization of the Monster in "Frankenstein," for instance, was played at a very deliberate tempo; while his portrayal of the Racketeer in "Night World" was paced very much faster. Lee Tracy's recent portrayals of newspaper reporters—especially in "Blessed Event"—are noteworthy examples of ultra-rapid tempo.

Changes of tempo are often valuable in highlighting certain dramatic moments in a characterization. Charles Laughton's interesting character-study in "Devil and the Deep," for example, was played chiefly at a fairly deliberate pace, but the dramatic climaxes were highlighted by abrupt outbursts at a decidedly accelerated tempo.

The actor's greatest aids are good direction and thorough rehearsal. Very few actors are able to direct themselves; the best guarantee of success is for the actor to place himself in the hands of a capable director—and then work willingly with him. Such delicate matters as tempo, timing and grouping demand the detached perspective of someone who is able to see the action as a whole rather than as an individual performance.

Rehearsals should be considered not as something to be merely walked through anyway, but as a laboratory where one can analyze and refine his performance until everything superfluous is eliminated, and all that is essential brought out in its perfect proportion.

Above all, remember "Hamlet's" advice: "Suit the action to the word and the word to the action Nor do not saw the air too much with your hand, but use all gently; for in the very whirlwind of passion you must acquire and beget a temperance that may give it smoothness."



Putting "Teeth" in Your Pictures

Continued from Page 32

ing—or re-adjusted by the gauge if moved—and certainly after re-loading.

Starting with the 1 inch lens a general shot of the beginning of anesthesia was taken. At 8 feet the 1 inch lens gave a small view of the patient and included the anesthetist's head, arms and much of the immediate surroundings. But a 1 inch lens at 8 feet picture would have been entirely too small to show the details of operation. At the proper time the 3¾ telephoto lens (previously critically focused) was carefully rotated to film position, and the filming continued without even looking in the finder—which of course would be necessary if relative positions had not been changed by either moving the camera or the 'scene.'

The 3¾ telephoto lens at 8 feet gives a picture of the

patient's face that nearly fills the frame (and of course the screen) making the smallest details of the operation quite large and clear—in fact the small black suture threads are plainly seen on the screen.

With a telephoto lens ESPECIALLY there must be no 'jiggle' or movement of the camera otherwise the picture will jump all over the screen. Any close-up, and especially telephoto work, can only be well done on a tripod with alignment gauge, or the equivalents thereof.

I used Super-sensitive film on the picture described. With the lighting described the photometer said f 6.3 which meant f 8. for the super-sensitive.

I used no specially made equipment in the operating room but did so at home in filming in convenient ad lib, several still photos of the patient's face and mouth conditions before the operation. Also home-made equipment for filming in the dental X-ray negatives by trans-illumination and for greatly magnifying and filming them singly. Also an arrangement for rotating, opening and closing plaster casts of the case while filming without showing anything except the white moving casts against a black back-ground. This was all done at odd times at home—on home-made apparatus. Subsequent 'shots' of the patient and the finished case were taken in my office operating room by practically the same technique as used in the hospital.

In order to make the 'still' pictures of the patient look 'less still' a piece of card-board was set up edgewise around the outside of a Stineman developing coil. The still photos were set around against this, framed with black paper, the coil revolved slowly on a pivot on the table top and filmed turning around, back and forth. This made each picture large enough and the several in quick sequence for comparative observation.

Details of 'ad libitum' shots taken at home:—

A full set of the patient's dental negatives (previously made) were arranged on a piece of ground glass, closely framed with black silhouette and illuminated from behind with two photo-flood lamps, concealed from the camera by a large 28x42 inch black show-card board with a hole cut out to disclose the ground glass and X-ray negatives. This showed all of the pictures about as the dentist mounts them. Each X-ray negative was then mounted separately, framed in black, trans-illuminated and filmed at about 9 inches, through an Eastman titler magnifying glass, through 1 inch f 3.5 lens set at infinity. This makes an ordinary dental X-ray film, (a little larger than a postage stamp) nearly fill the screen, greatly magnifying it, of course. This could also be done at about 3½ feet with the telephoto lens.

A natural color process surgical picture would be per-

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use



haps more spectacular, but for exhibition to those at all familiar with such they recognize 'black' blood as such, except that the flesh is 'flesh color' and instruments are mostly 'steel color' although they do not so appear in the black and white picture.

However, now that there is a possibility of a color process that will permit telephoto lenses and pictures with less than bright day-light, surgical pictures in colors taken from practicable filming distances with telephotos giving sufficiently large details, using regular pan film and permitting duplication, I understand are quite feasible.



Story—Human Interest—Action

Continued from Page 31

cameras, objects moving directly across the screen relatively close to the camera are almost always blurred.

In making pictures of football games—as all of us, professional and amateur, are doing these days—it is better to shoot long shots than to try for close-ups. The average man in the stands should hardly ever try to use more than a two inch lens, unless his seat is very high up in the stadium; then a three might be all right. Using lenses of longer focal length, it is, of course, possible to get individual shots of some particular player who stands out, but in doing so, we fail to get the action in true relationship to the game itself. A few figures fill the frame completely; a few strides, and they are out of the picture—leaving us no idea at all of the play itself. It is, of course, possible to follow some plays in telephoto shots, but, due to the wide shutter aperture with its inevitable blurring of fast motion, and to the inevitable inaccuracy of finders with such lenses, such follow-shots are seldom satisfactory. Therefore the best plan is to use a lens that will give us a complete picture of the two teams as they line up for scrimmage. Of course, the style of play will make some difference: if the game is running chiefly to line plays and close runs around the ends, we can use longer focus lenses than would be wise if the play ran more to wide runs, passes and kicking. To my mind, the best results are obtained from using a turret-equipped camera, with a one inch and a two inch lens, both set at infinity, and alternating the two objectives as the play dictates.

Slow-motion is always useful in sports pictures—especially such fast-moving sports as football and hockey. But running the camera at the speeds necessary to get the maximum slow-motion effect uses up a lot of film; so a very practical expedient is to compromise, using only a moderately fast taking speed—say 36 frames per second, and then get the rest by projecting them with the projector running well below normal speed.

In photographing football games in a large stadium, it is a good idea to bring two kinds of film: the cheaper Panchromatic for the early part of the game, and Super-sensitive for use later, when the field is largely in deep shade. Also, if you want to make a complete record of the game, you'd better use two cameras, and have a friend with you to load one while you shoot with the other. Also, if you want a complete story, get a few shots of the crowd—long-shots of the stadium itself, and (if you can get them) closer "candid camera" shots of the spectators. And don't forget the rooting-section stunts between the halves!

In shooting other events that are more definitely pictures of an individual, get as close a shot as is possible. "Frame" your shot as you would a still picture, with the figure close to the center of the picture. If possible, have your actor against a background that has something to do with either the character or the action.

Don't have your personage merely stand and smile. Have him doing something—even if it is only talking. If this last is the case, give him a foil with whom to work—

someone else to stand in the picture, with whom he can be talking. Usually three-quarter shots of people are best; but no matter what angle you use, have your man or woman doing something definite. Some poses of celebrities in the old newsreels lack only a row of numbers on the chest to look exactly like rogues' gallery pictures.

News stories must have human appeal, even if they are shots of celebrities. There is more human appeal about a fellow if he is doing something—especially if he is shown in lively, natural conversation with somebody. If you photograph someone merely standing still and smiling embarrassedly, you might as well tack up a still picture of him and shoot that.

If you plan to show the size of any object, or a picture of its detail, pan slowly, and not too long. Sometimes it takes good judgment to decide when to stop, but you can always be sure that the picture will be better short, even if it doesn't cover quite everything.

Everyone knows when to begin photographing a scene—but it is often harder to know when to stop; a good rule to follow is to stop the camera when the action has progressed far enough to let the audience know what has happened. Many pieces of action can be left uncompleted on the screen provided enough is shown to give a clear idea of the nature of the action. Sometimes, on the other hand, it is necessary to make a complete record. In doing this, let the picture run long, but give it variety by frequent changes of angle.

It is a good policy to study the technique of the different newsreel cameramen and editors closely when you go to the theatre. You will find that some editors prefer to have their subjects run longer than do others, while some will invariably cut their scenes and subjects short. The latter, I think, makes for the best newsreel technique, as it keeps the thing moving faster, and shifts to another subject before the audience has had time to become sated with the first one. There is a knack, too, to arranging the different stories that go to make up a newsreel issue. As a rule, it is best to open up the reel with some subject of especially timely news-interest, and to finish it with something that has a maximum of physical action. It is also often a good idea to scatter a few short "flashes from here and there" in the middle of the reel—sometimes these may be just one or two scenes of some unusually interesting person or event; stories that can't stand overly detailed exposition, but which, if kept short, are interesting.

16 mm. news films are an excellent means of keeping up interest and activity in an amateur movie club while more pretentious productions are prepared. The different members can be assigned to "cover" certain events of local or club interest, and the whole cut together as a two or three hundred foot subject to be shown at club meetings. This will enable the members to improve their photographic technique, and give them, as well, the feeling that they are doing something for the good of the club.

But to return to the purely personal news film: you can always pep up your home programs with such pictures. Usually, you can be sure that your audience will be less interested in your personal films than you are. This applies to all but the most exceptional of news subjects as well; therefore they will welcome short shots and frequent changes of subject-matter. You will notice how frequently I stress the subject of short shots and variety of subject-matter; this is what creates interest in the professional newsreel—and it can do no less in the amateur one. A circus prospers because it provides entertainment for a wide variety of tastes; the newsreel is the circus of the movies. In the professional theatres, some patrons prefer Greta Garbo and some prefer Tom Mix—but everyone likes to see the newsreel.

It is the same with home movie audiences—so pep up your programs with your own newsreel!

Orientalism to Order

Continued from Page 16

cap he would later don, and to represent the forelock of the old-school Chinaman. The last steps, of course, were the usual ones of applying grease-paint and powder—in this instance, a special blend created in the M-G-M makeup laboratory, and which gives exactly the proper coloring to both look and photograph like the skin of an oriental. The application of this makeup required more than three hours of the hardest and most exacting work on the part of the makeup man—and no little discomfort on the part of Mr. Karloff. Such character makeup is certainly no game for amateurs!

In some instances, of course, we do not have to go to so much trouble to make our players up into orientals. With Myrna Loy, for example, who played Karloff's daughter in the same production, the task was far simpler. Miss Loy has a somewhat oriental cast of features to begin with, therefore, all that was necessary was to apply the inevitable tapes under the hair, to draw the eyes and eyebrows slightly upward, to elongate the eyes with the use of lining-pencils, to similarly alter the contour of the eyebrows a trifle, to make the lips up somewhat fuller than would be necessary for a European characterization, and to apply the special Chinese-blend grease-paint and powder. Add a Chinese costume and coiffure—and you have a perfect Chinese girl!

In both of these portrayals—as in every picture, whether it requires character makeup or no—the ultimate and most important factor is the cinematographer. The makeup man and the cinematographer must always work very closely together; most of all if the picture, as this one did, depends to any great extent upon character makeups. On "The Mask of Fu Manchu," we were extremely fortunate in having Gaetano Gaudio, A. S. C. (otherwise "Tony") in charge of the camera work. His ability to secure beautiful photography, without introducing any elements which would tend to dispel the effect of the makeup, meant the difference between success and failure to both Mr. Karloff and the makeup department. Moreover, Mr. Gaudio's willingness to cooperate with us in preparing the makeup as well as in the actual production of the picture was of incalculable value to us all. For in the long run, the success or failure of a picture which, like this one, involves so much in the way of unusual character makeups, is determined in advance by the relations existing between the makeup artist and the cinematographer. When they understand each other's aims and problems, and can cooperate as perfectly as was the case here, they can, between them, do the impossible.



W. J. (Bill) German Visits Hollywood

For the first time since he introduced the new Eastman super sensitive panchromatic negative in February 1931, William J. (Bill) German, vice-president and general manager of J. E. Brulattour, Inc., of New York visited Hollywood last month.

While in Hollywood he was among the executives represented during the judging of the 16 mm. pictures in the contest which was conducted for the past year by the Society of American Cinematographers.

In expressing his amazement at the photographic results achieved by some of the amateurs, he requested permission of the Society to take several of the outstanding photographic pictures back with him to Rochester to show to the executives of the Eastman Kodak Company.

Highlights of Amateur Contest

Continued from Page 20

these figures, one is tempted to recommend that a special award be given to the individuals who had to wade through this maze of computations.



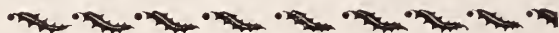
Another palm should go to the members of the A.S.C. who served on the various sub-committees handling the preliminary judging. These committees reviewed from twenty-five to fifty pictures per day for a period of over six weeks. That, ladies and gentlemen, is work! But it proved thrilling work, for one never knew what the next picture would be—it might prove a potboiler or a masterpiece. The suspense, as the felon remarked to the hangman, was terrific.



The ladies were well represented among the entrants, especially with the superb nature-studies of Margaret Bodine and the interesting film-reportage of Ruth Rodgers. Both youth and age were represented: one contestant admitted that his films were made during his 72d summer, while another entered a playlet in the making of which no one over 16 had participated.



As one of the more ultra-impressionistic films was projected, Clarence Brown was overheard to remark, anent a series of weird angle-shots, "Maybe I'm wrong, but a crooked camera is still a crooked camera to me!" And a few moments later, as some of the impressive scenery of Catalonia was shown, "Lucky devil—think how far we'd have to travel to find locations like that!"



The Third Girl



AMID the gayety of preparations for the Christmas season won't you pause a moment to pity the "third girl"? Among all young women who die between the ages of 15 and 30 one out of three dies of tuberculosis—a human sacrifice to ignorance and indifference. Tuberculosis is preventable and curable. Turn your pity into action and buy Christmas Seals. Your pennies help spread the knowledge that will save lives.

THE NATIONAL, STATE AND LOCAL
TUBERCULOSIS ASSOCIATIONS
OF THE UNITED STATES

BUY CHRISTMAS SEALS

Color in Motion Picture Advertising

Continued from Page 10

playlets and are serviced direct to the theatres showing them and are shown as a single unit at one place on the program. This limiting of the number of ads shown on a program has a twofold effect, one is to render the presence of advertising on the program entirely unobjectionable to the audience and the other is upon the value of this showing to the individual advertiser, the individual ad is not submerged in a mass of other advertisements to the point where his ad is not remembered.

Now we come to the point where the reason should be given for producing screen broadcasts in technicolor. First, most articles of merchandise today are highly colored and to try to create a desire for them by presenting them in black and white, left much to be desired. The appeal of color is universal. Second, the use of color ties right in with the present vogue of color in most national advertising campaigns in other mediums and leaves nothing to be desired on the part of the advertiser, as the identification of his product may be as much by color as by illustration. Third, the color photography of today has been brought to a state of perfection where the realism of the scenes as well as individual articles shown in them enhances the entire program on which they appear and make of them a bright and interesting spot in any program.

Now let us step behind the scenes and follow the actual production of screen broadcasts from their inception as ideas to be made into scenarios.

The campaign that this particular firm is preparing for release must be adapted for the screen in much the same manner that a novel has to be revised and otherwise adapted for the screen, and for much the same reasons. Obviously all the reading matter of a newspaper ad cannot be shown, but by careful thought and planning the same story can be told, by combining action, voice and sound. After the series of films, or playlets, as we term them have been completed in scenario form, the story that each one of them tells is sketched as a series of illustrations representing each scene in continuity and with the voice or sound that is to accompany each playlet typewritten in the margin down one side of the sheet and sent to the advertiser for approval before starting production.

Simultaneously with the submission of sketches of the film to the advertiser, the sets that will be required for the production of the films are designed and filed to be ready when the approved scenarios reach the production department. Upon receipt of the approved scenarios the sets required are constructed and arranged and after selection of the cast and assembling various props the actual shooting starts.

Many of the scenes are double or multiple exposures and most scenes dissolve together. Now inasmuch as the effects and tricks that are practiced in black and white cinematography by means of after treatment and making duplicate negatives by means of an optical printer are of necessity done in the camera, considerable rehearsal and careful timing are necessary to get just the parts of the action that tell the story in exactly the predetermined amount of footage. All this calls for patience and most careful timing of camera and action and at the same time careful balancing of lighting and exposure so that the finished composite scenes which sometimes combine exteriors made in brilliant sunlight with mazda lit interiors will all appear with the same contrast and density and colors remain unchanged in the combined scenes.

Because of the particular methods necessarily involved in making a film of this type, recording of sound must be done after the film is completed by synchronizing projector and recorder and rehearsing till sound and picture are perfectly synchronized then recording continuously through the several scenes in each playlet. Other methods are to record

while shooting and dub in certain effects by re-recording.

Of further interest may be the number of "syndicated" playlets made in our studio, for in addition to the special films made for national advertisers there are a large number of playlets made for a number of standardized lines of business and these are served in the same manner that the special films are.

We make films for 29 lines of business in series of 52 films for each line per year which makes a total of 1508 playlets in color each year. The production of these films differs from the specials for national or territorial distribution in no way except that the name of each dealer or merchant is a separate trailer and added to each film before assembling the reels to be shipped to the various theatres.



Riddle Me This

Continued from Page 13

capable of doing far finer work than the present standard of story quality permits. To my mind, the art of cinematography, although it has reached a very high standard, is still far from its zenith; but it cannot progress much farther until better, more suitable stories are put before the cameras.

"I do not, however, feel that the art of cinematography itself will be any different in 1942. Art is changeless: what is good art today will still be good art tomorrow. A painting by Rembrandt, who lived three hundred years ago, is still esteemed as a masterpiece today; the photographs that David O. Hill made a century ago are still rated among the finest examples of photographic portraiture extant. Similarly, if the cinematographic art which we are purveying today is truly art, it will be equally satisfactory—technical or mechanical considerations being ignored—ten years from now. In the same way, the films of ten years from now should not be greatly different, in so far as cinematic artistry is concerned, from those of today. Materials will undoubtedly be improved and equipment bettered—perhaps revolutionized; but the basic principles of cinematic art as we now know them will undergo no change. How fully we will be able to utilize the possibilities of our art must depend, however, not so much upon the cinematographers themselves, but upon those who dictate and prepare the material that is given them to photograph."



Chicago Club to Film Exposition

THE highlight of the Chicago Cine Club 1933 activities will be the filming of the Progress Exposition to be held in that city. This event will be covered by the club members, each being assigned certain duties.

In October this club had its annual election of officers. Glenn Steele Bowstead was elected president; Stanley J. Warner, vice-president; Warren R. Sandage, treasurer; William Macomber, secretary. The Program committee consists of Geo. J. Cowan, D. R. Furness, E. J. Hamme and S. E. Butler; Finance Committee, G. R. Turtle and H. W. Clark; Membership committee, Stanley F. Warner, G. J. Cowan, L. E. Wever, W. R. Sandage; Film Committee, A. L. Bartlett, H. W. Clark, D. R. Furness; Adjudication Committee, H. C. Unger, C. A. Paulson, Dr. O. Nugent; House Committee, L. Rysavy and M. R. Richmond; Award and Contest Committee, J. A. Hutter, Jr., R. W. E. Yardley, W. A. Scott; Publicity, Horman J. Phelps; Directors, Phelps, Paulson, Bartlett.

Under the guidance of President Bowstead an active and ambitious program has been outlined. The main bit of work will be the filming in all of its detail the Progress Exposition by the club which will be in the nature of an historic record of this event.

Secretary Macomber announces the club has a film for loan to responsible clubs, titled "Chicago." Address W. W. Macomber, 11112 Merchandise Mart, Chicago, Ill.



AGFA RAW FILM CORPORATION

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Factories: Binghamton, New York, U. S. A.

An advertisement for the Astro camera. The central image shows a camera on a tripod, with a large, stylized "PANTAGRAPH" lettering in the background. Below the camera is a large, stylized "ASTRO" logo with "G-M-B-H" and "BERLIN" inside it. To the right of the logo, it says "ON SALE BY MITCHELL CAMERA CORPORATION". Below that, the address "665 NORTH ROBERTSON BOULEVARD WEST HOLLYWOOD CALIF." is printed. To the right of the address, the focal lengths "F:1.8" and "F:2.3" are listed.

Thru the Lens of the Critic

Continued from Page 8

camera strictly as a means of story-telling; not (as so many directors are wont to do) as a bit of cheap directorial pyrotechnics. Unlike many mystery and horror films that have been released lately, there is no forced striving for effect, either dramatic or comic: therefore the melodrama of "The Mummy" is doubly powerful, since it is natural. Despite the somewhat improbable story, revolving around a revived mummy, and its sinister occult influence upon the characters, the picture is excellent entertainment, and does not leave an unpleasant taste in one's mouth.

Charles Stumar's photography is of an equally high order, and evidences the possibilities latent in the cooperation of a great cinematographer-director and an outstanding cinematographer. In no part of the picture is there any suggestion of the slightest lack of perfect understanding and cooperation between the man at the camera and the director; no suggestion (as there is so often in other films) of the one forcing the other to do unwise things, or the other attempting to conceal the inability of his fellow. In a word, "The Mummy" shows two fine artists working together with perfect understanding.

Photographically, the picture is excellent; it is probably the best work that Stumar has done in some time. Many of the sequences require unusual effect lightings, which he has handled with unusual skill. He has not hesitated to occasionally sacrifice face-lighting when the scene required it. Neither has Stumar indulged in an orgy of exaggerated, ultra-low-key effects merely because he was handling a horror-film.

The process work—of which there was considerable—is excellent. The sets, designed by Willy Pogany, are also far above the average. The editing of certain parts of the film, however, might be improved, as some of the transitions between the sequences were so abrupt as to cause some confusion. Likewise, it is unfortunate that Universal chose to preview a rather light working-print to the press. Such a policy is unfair to both cinematographer and director—and, in fact, to everyone connected with the production—for the average reviewer is not a technician, and can rarely make allowance for the unavoidably poor quality of a working print; on some occasions the print is in so unfinished a condition that even experienced reviewers can get no clear idea of the technique of the finished picture. Previewing working prints to the press is a policy that everyone in the industry should discourage, for all suffer from it.

It's Not Just the Camera

Continued from Page 35

negative, and make your print light, literally turning night into day for you.

If you have a multiple-speed camera, like a 70-D Filmo or a Model 5 Victor, you can do a great deal "in speeds." Of course, I suppose every amateur knows if he is shooting, say, a football game in high-speed (slow-motion), he can save film and get the desired effect by shooting at only a moderately high speed—32 instead of 64—and then projecting with the projector running well below normal speed. But there are more than merely "half," "normal" and "super-speed" movements on most such cameras: by using the intermediate speeds you can get a wide range of dramatic and comedy effects without the abnormal appearance you get with the extreme fast and slow speeds. Working "in speeds" was half the secret of the success of many pictures—both comedies and features—of the silent days.

But, remember that it isn't what you have to work with, nor even what you do: it's how you do it, that counts. Whether it's "Rasputin" or "Jr.'s First Step," it's the brain of the man behind the camera that makes it a good picture—or a bad one.

Classified Advertising

Rates: Four cents a word. Minimum charge, one dollar per insertion.

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FOR SALE—30% to 60% cash savings on 16 mm. and 35 mm. cameras, projectors and accessories. Write for Bass Bargaingram. Specify size of apparatus interested in. For over 22 years Value Leaders of the nation. Your copy is ready. Write for it. Bass Camera Company, 179 W. Madison St., Chicago, Ill.

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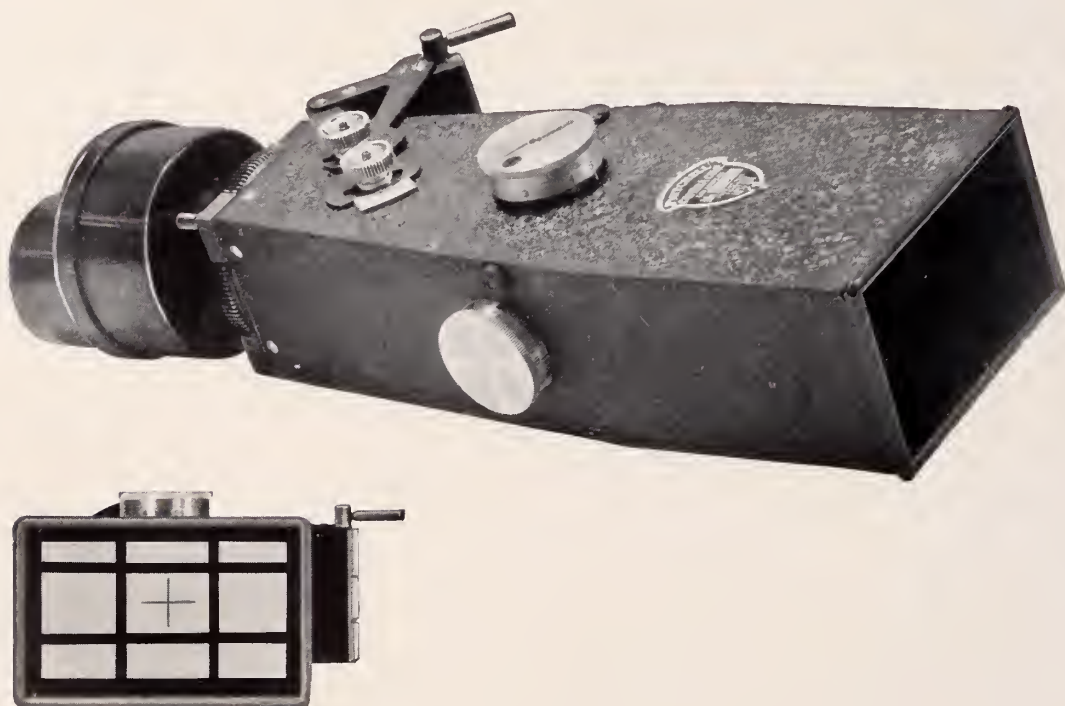
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